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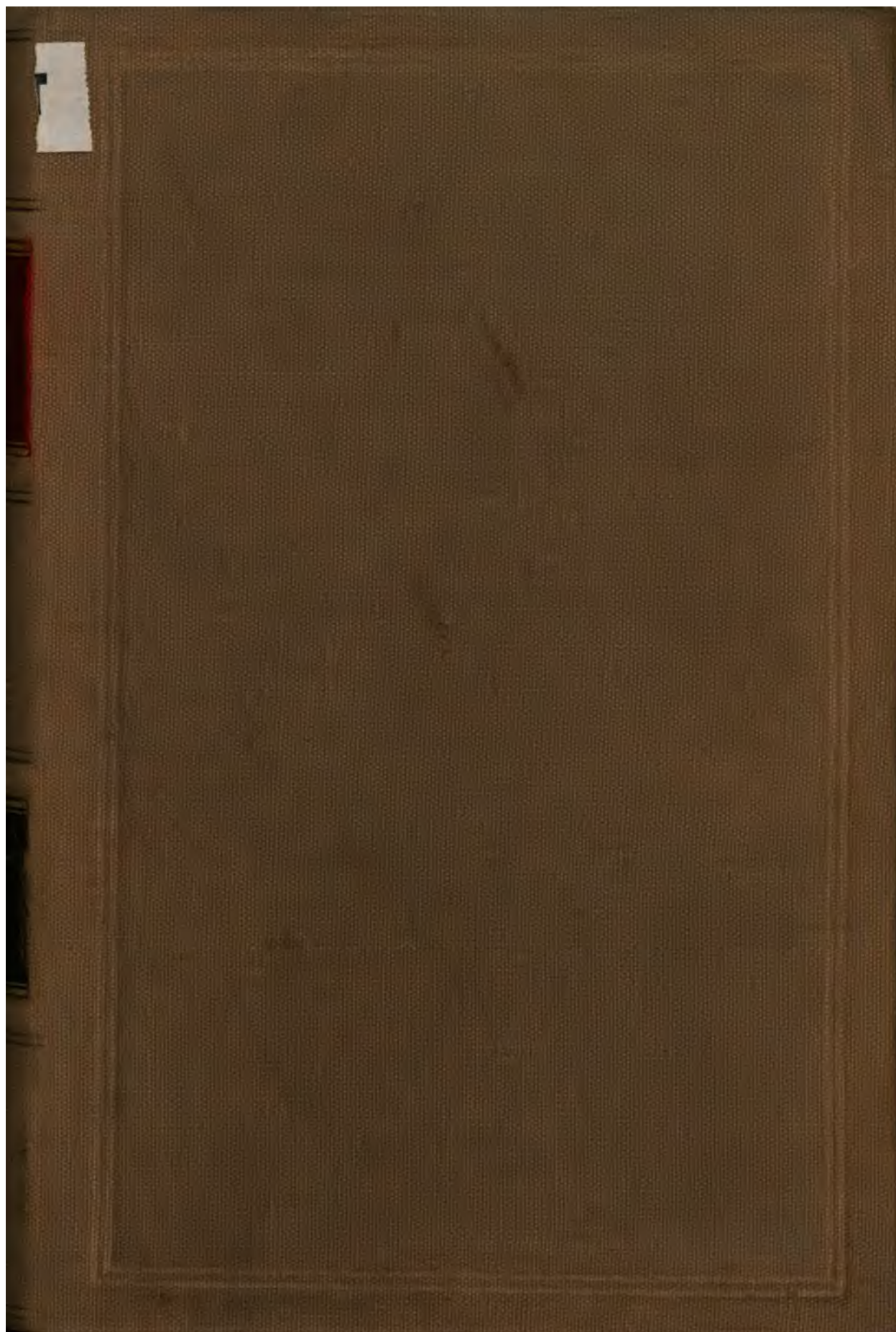
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U.S. Supreme Court

BRODIX'S AMERICAN AND ENGLISH PATENT CASES.

VOL. XI.

DECISIONS

ON THE LAW OF

PATENTS FOR INVENTIONS

RENDERED BY

THE UNITED STATES SUPREME COURT.

FROM THE BEGINNING.

93 U. S. (3 OTTO), - 97 U. S. (7 OTTO),
1876. 1878.

EDITED AND ANNOTATED

BY

WOODBURY LOWERY.

WASHINGTON, D. C.
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EXPLANATION OF NOTES.

The Text of the Opinion.

The text of the opinion of the court is taken wholly from the record, and not from the official reporter. The reason for this is that the record is the original source from which the reporter himself obtains his matter ; that it is complete, no cases decided by the court being omitted therefrom ; that on application to the clerk of the court for a certified copy of an opinion, it is the copy of the opinion as it appears in the record, and not as printed in the official report that he furnishes.

Prominent among the advantages secured by printing the record, is the fact that the statement of the case, involving all those facts which the court considers material to the understanding of its opinion is made by the court itself, strictly in view of its decision, concisely and judicially, whereas the official reporters, Wallace and Otto, have omitted whole pages of the statement as made by the court, substituting their own, or have so amended and varied the court's statement as to make it practically a new one. The case of *Union Paper Collar Co. v. Van Deusen*, reported in volume 10, p. 156, is a notable example, on consulting which the foot-notes appended will be found to point out the variation of the official reporter from the original record.

It will also be observed that this practice of these reporters has often been the cause of omitting in their reports the introductory part of the opinion as given in the record, supplying it from their own point of view and actually beginning the report of the opinion at an intermediate point of the record.

The text in this work has been prepared from printed certified copies of the record, and has undergone a second comparison while in type before printing made directly with the original record in the Supreme Court, giving an assurance that no effort has been spared to secure accuracy.

It has further been compared with the officially published reports and the

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divergencies of the latter from the record pointed out in foot-notes to each case where they occur, in justification of the course pursued by the editor, and for the convenience of the profession.

The Syllabi, or The Head Notes.

The head notes have been prepared with care and considerable elaboration, the editor deeming it more convenient to the profession that he should err on the side of too great minutia in calling their attention even to what may be regarded as *dicta* of the court. At the end of each head-note will be found between brackets, the page of the opinion of which it is a digest. The head-notes are numbered consecutively and at the end of each case there will be found under the corresponding number of the head-note a note of Supreme Court Patent Cases, in chronological order, relative to the subject-matter of the head-note.

The Annotations, or Notes at ending of Case.

Notes at ending of case are of three kinds: those in the form of notes to the head-notes; those relating to the patent in suit; and those relating to cases in which the particular case reported has been cited.

Notes to the head-notes. These consist of Supreme Court Patent Cases, arranged in chronological order, in which the substance of the head-note has been restated, affirmed, or applied, as the case may be; these have been brought down to the latest decisions of the court accessible at the date of printing the volume.

The patent in suit is next given with its reissues, if any, followed by a chronological list of all reported Federal suits in which the patent has been involved.

Citations of the particular opinion. Then follows a list of those cases in which the opinion reported has been cited. This list includes Federal, State, and Canadian Cases, opinions of the Attorney-General, and of the Commissioner of Patents, and the latest text-books, Curtis, 4th Edit., Walker, Merwin, and Abbott.

All the lists are chronological in arrangement and in the list of citations the dates are appended.

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Additional References, &c.

To facilitate the finding of any case appearing in the notes, not only is the original report given, but also volume and page of Robb, Fisher, Banning and Arden, and others in which it is reprinted.

Both in the opinion and arguments the rule has been followed of adding the *names* to cases cited by page and volume only, these additions to the text being included in brackets.

Blank lined spaces after each note and a blank page at the end of each case are left for the insertion of additional citations and of general notes.

Tables.

There are added a number of tables and two indexes for ready reference. These are Tables of Cases, Reference Table of Cases, Table of Patents in Suit, of Cases Cited, of Abbreviations, of Names of Justices, of Names of Counsel, an Index Digest and a Digest of Notes.

Reference is made throughout the work to the volume and page of the English cases already published as part of this series, wherever they occur.

WOODBURY LOWERY.

WASHINGTON, D. C.

March 1, 1889.



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The object of comparing the pages in these cases is for convenience of reference showing where the text in the opinion of the court on each page of the Official Report is found in this edition, or if an attorney wishes to cite the Official Reports while using these volumes, he can readily do so by turning to this table and finding on what page in the official edition any page of the Opinion of the Court in this volume may be found.

In making this comparison, out of justice to ourselves, where we have inserted new material such as drawings, specifications, arguments of counsel, statements and parts of the opinion from the records which are not found in the Official edition we have so indicated.

As an example in the use of this table take the case of *Cochrane v. Deener*, which begins in 94 U. S. on page 790—see first column; in this volume, page 288—see third column; the opinion of the court begins in U. S. on page 781—see second column; in this volume, page 330—see fourth column, and thus through the opinion each page is compared. We have inserted in this volume many drawings and specifications which are not found in the Official Reports, and any omission in the consecutive numbering of the pages can be accounted for in the same manner.

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Merrill v. Yeomans	94 U. S. 573 [p. 203 <i>post</i>]	390. Opin.
Mevs v. Conover	Bk. 23, L. ed. 1008 [p. 39 <i>post</i>]	548. Opin.

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Moffitt v. Garr . . .	1 Black, 282 [7 Am. & Eng. 111] . . .	36. Opin.
" " . . .	1 Black, 273 [7 Am. & Eng. 111] . . .	35, 41. A.
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" " . . .	14 C. B. (N. S.) 490 . . .	470. S.
Outram v. Morewood . . .	3 East, 346 . . .	228. A.
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" "	11 C. B. (N. S.) 471	83, 90. Opin.
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Ransom v. Mayor of N. Y.	1 Fish. 262	214, 450, 532. A.
Reed v. Cutter	1 Story, 590	532. A.
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Sargent v. Seagrave	2 Curt. 553	532. A.
Sawyer v. Birby	1 Gaz. 165	468. S.
Sayles v. Chicago & N. W. R. R. Co.	2 Fish. 253	48. A.
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Singer v. Walmsley	1 Fish. 558	158, 160. A.
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Smith v. Goodyear D. V. Co.	11 O. G. 246 [p. 1, <i>post</i>]	473. A.
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United States v. Russell	13 Wall. 623	130. Opin.
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Winans v. Denmead	15 How. 344 [6 Am. & Eng. 107]	415, 438. Opin.
" "	15 How. 330 [6 Am. & Eng. 107]	160, 383, 434, 450, 473. A.
" "	15 How. 343 [6 Am. & Eng. 107]	470. S.
Winans v. N. Y. & H. R. R. Co.	4 Fish. 7	117. A.
Winans v. R. R. Co.	2 Blatch. 279	533, 534. A.
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Winans v. Schenectady & Troy Railroad Co.	2 Blatch. 279	449. A.
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Wyeth v. Stone	1 Story, 273	532. A.
Young v. Femie	10 L. T. (N. S.) 864	470. S.

TABLE OF ABBREVIATIONS

OF THE TITLE OF REPORTS AND WORKS OF LAW USED IN THIS
VOLUME.

Abb. Pat. Laws	Abbott's Patent Laws of all Nations.
Abb. U. S.	Abbott, U. S. Circuit Court.
Abb. U. S. Prac.	Abbott's U. S. Practice Cases.
Ad. & Ell. (N. S.)	Adolphus & Ellis, England, K. B.
Alb. L. J.	Albany Law Journal.
Am. Law Jour.	American Law Journal.
Am. Law Reg. (N. S.)	American Law Register (New Series).
Am. & Eng.	American & English Patent Cases.
App. Cas.	Appeal Cases, English Law Reports.
Att'y Gen.	Attorney General's Decisions.
B. & A.	Banning & Arden's Patent Cases, U. S.
B. & Ad.	Barnewall & Adolphus, England, K. B.
B. & Ald.	Barnewall & Alderson, England, K. B.
B. & C.	Barnewall & Cresswell, England, K. B.
Bald.	Baldwin, U. S. Circuit Court.
Ban. & Ard.	Banning & Arden's Patent Cases, U. S.
Barb.	Barbour's New York Chancery Reports.
Best & S.	Best & Smith, England, Q. B.
Bingham Judgments	Bingham on Judgments.
Bing. (N. C.)	Bingham's New Cases, England, C. P.
Biss.	Bissell, U. S. Circuit Court.
Black	Black, U. S. Supreme Court.
Blatch.	Blatchford, U. S. Circuit Court.
B. Mon.	Ben. Monroe's Kentucky Reports.
Bond	Bond, U. S. Circuit Court.
Bradw.	Bradwell's Illinois Reports.
Brews.	Brewster's Pennsylvania Reports.
Bright. Fed. Dig.	Brightly's Federal Digest.
Brock.	Brockenbrough, U. S. Circuit Court.
Brodix	Brodix's American & English Patent Cases.
Bump	Bump on the Law of Patents.
C. B. (N. S.)	Common Bench Reports, New Series.
C. D.	Commissioner of Patents' Decisions, U. S.
C. P.	Common Pleas, England.
C. & F.	Clark & Finnelly's House of Lords Reports, England.
Car. & Kir.	Carrington & Kirwan, England, N. P.

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Casey	Casey's (Penn.) State Reports.
Cliff.	Clifford, U. S. Circuit Court.
Com. Dec.	Commissioner of Patents' Decisions, U. S.
Cond. (Reps.)	Peters' Condensed Reports, U. S. Supreme Court.
Cow.	Cowen's New York Reports.
Cranch.	Cranch, U. S. Supreme Court.
Ct. of Claims	Court of Claims, U. S.
Curt.	Curtis, U. S. Circuit Court.
Curtis on Pata.	Curtis on Patents, U. S.
Cush.	Cushing's (Mass.) Reports.
Dall.	Dallas, U. S. Circuit Court.
Dan. Ch. Pr.	Daniell's Chancery Practice.
Dav.	Davies' Patent Cases, England.
De G. M. & G.	De Gex, Macnaghten & Gordon, England, Chancery.
Denio	Denio's New York Reports.
Dill.	Dillon, U. S. Circuit Court.
E. C. L. R.	English Common Law Reports.
E. & B.	Ellis & Blackburn, England, Q. B.
East	East, England, K. B.
Ell. & Bl.	Ellis & Blackburn, England, Q. B.
Eng. C. L. (C. B. N. S.)	English Common Law Reports.
Eng. L. & E.	English Law & Equity Reports.
Exch. W. H. & G.	Exchequer Reports (Welsby, Hurlstone & Gordon), England.
Fed. Rep.	Federal Reporter, U. S.
Fish.	Fisher's Patent Cases, U. S.
Fish. Pat. Rep.	Fisher's Patent Reports, U. S.
Flipp.	Flippin, U. S. Circuit Court.
Gall.	Gallison, U. S. Circuit Court.
Gill	Gill's Maryland Reports.
Godson on Pata.	Godson on Patents, England.
Gratt.	Gratton's Virginia Reports.
Gray	Gray's Massachusetts Reports.
Greenl. Ev.	Greenleaf on Evidence.
H. Bl.	Henry Blackstone, England, C. P.
H. of L.	House of Lords' Cases.
H. & N.	Hurlstone & Norman, England, Exch.
Har. & Gill	Harris & Gill's Maryland Reports.
Hemp.	Hempstead, U. S. Circuit Court.
Hill	Hill's New York Reports.
Hilliard Inj.	Hilliard on Injunctions.
Hind. Pat.	Hindmarch on Patents, England.
Holmes	Holmes, U. S. Circuit Court.
How.	Howard, U. S. Supreme Court.
Hughes	Hughes, U. S. Circuit Court.

Hurla. & Colt.	Hurlstone & Coltman, England, Exch.
Hurla. & Nor.	Hurlstone & Norman, England, Exch.
J. B. Moore	J. B. Moore, England, C. P.
Johna.	Johnson's New York Reports.
Jur. N. S.	The Jurist, New Series, London.
Kyd Aw.	Kyd on Awards.
L. ed.	Lawyer's Edition of Supreme Court Reports.
L. J. N. S.	The Law Journal, New Series, London.
L. R. C. P.	English Law Reports, Common Pleas.
L. R. Ch. App.	English Law Reports, Chancery Appeals.
L. R. Eq.	English Law Reports, Equity.
L. Times (N. S.)	Law Times, New Series.
Law's Dig.	Law's Digest, London.
Law T. (N. S.)	Law Times Reports, New Series.
Leg. Int.	Legal Intelligencer.
M. & Cr.	Milne & Craig, England, Ch.
M. & W.	Meeson & Welsby, England, Exch.
MacA.	MacArthur's District of Columbia Reports.
MacA. & McK.	MacArthur & Mackey.
McAll.	McAllister, U. S. Circuit Court.
McC.	McCrary, U. S. Circuit Court.
McL.	McLean, U. S. Circuit Court.
Mackey	Mackey, U. S. Circuit Court.
Maine	Maine Reports.
Man. G. & Scott	Manning, Granger & Scott, England, C. P.
Marsh.	Marshall, England, C. P.
Mas.	Mason, U. S. Circuit Court.
Mass.	Massachusetts Reports.
Md.	Maryland Reports.
Me.	Maine Reports.
Mees. & W.	Meeson & Welsby, England, Exch.
Merwin on Pat. Invt.	Merwin on Patentability of Inventions.
Met.	Metcalf's Massachusetts Reports.
Mod.	Modern Reports, England, K. B.
Moore & S.	Moore & Scott, England, C. P.
Ms. D. C.	Manuscript Cases, District of Columbia.
Munf.	Munford's Virginia Reports.
N. Y.	New York Court of Appeals Reports.
N. Y. Leg. Obs.	New York Legal Observer.
New Eng. R.	New England Reporter.
O. G.	Official Gazette of Patent Office, U. S.
Off. Gaz.	Official Gazette of Patent Office, U. S.
Ontario Rep.	Ontario Reports.
Otto	Otto, U. S. Supreme Court.
Pa.	Pennsylvania Reports.
Paige Ch. R.	Paige's New York Chancery Reports.
Paine	Paine, U. S. Circuit Court.

TABLE OF ABBREVIATIONS.

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Para. Cont.	Parson on Contracts.
Pet.	Peters, U. S. Supreme Court.
Pet. C. C.	Peters, U. S. Circuit Court.
Phila.	Philadelphia Reports.
Pick.	Pickering's Massachusetts Reports.
Pitts. R.	Pittsburgh Reports.
Pott. Dwarris	Potter's Ed. of Dwarris on Statutes.
Q. B.	Queen's Bench Reports.
R. & M.	Russell & Mylne England Ch.
Rep.	The Reporter, U. S.
Robb.	Robb's Patent Cases.
Salk.	Salkeld, England, K. B.
Sandf.	Sandford's New York Superior Court.
Sawyer.	Sawyer, U. S. Circuit Court.
Scott (N. R.)	Scott's New Reports, England C. P.
Seld.	Selden Reports (5-10 N. Y. Court of Appeals).
Sm. Lead. Cas.	Smith's Leading Cases.
Story	Story, U. S. Circuit Court.
Sumn.	Sumner, U. S. Circuit Court.
Sup. Ct. Rep. N. Y.	Supreme Court Reports, New York.
T. R.	Term Reports (Durnford & East), England.
Taney	Taney, U. S. Circuit Court.
Taunt.	Taunton, England, C. P.
Term R.	Term Reports (Durnford & East), England.
U. S.	United States Supreme Court Reports.
U. S. Law. Jour.	United States Law Journal.
Ves.	Vesey, England, Ch.
Vern.	Vernon, England, Ch.
Vt.	Vermont Reports.
W. & M.	Woodbury & Minot, U. S. Circuit Court.
W. Va. Rep.	West Virginia Reporter.
Walker on Pats.	Walker on Patents.
Wall.	Wallace, U. S. Supreme Court.
Wall., Jr.	Wallace, Jr., U. S. Circuit Court.
Wash.	Washington, U. S. Circuit Court.
Watts & S.	Watts & Sergeant's Pennsylvania Reports.
Web. P. C.	Webster's Patent Cases, England.
Web. on Sub. Mat. of Pats.	Webster on Subject Matter of Patents.
Wend.	Wendell's New York Reports.
Whart. Dig.	Wharton's Pennsylvania Digest.
Wheat.	Wheaton, U. S. Supreme Court.
Whit.	Whitman's Patent Cases, U. S.
Wood. & M.	Woodbury & Minot, U. S. Circuit Court.
Woods	Woods, U. S. Circuit Court.

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 Mr. Matt H. Carpenter, in opposition of motion. *Cochrane v. Deener*, p. 396.
 Mr. J. C. Clayton, for Appellants. *Rubber-Coated Harness-Trimming Co. v. Willing*, p. 483.
 Mr. Esek Cowen, for Eddy. *Eddy v. Dennis*, p. 409.
 Mr. W. S. Cox, for Appellants. *Cochrane v. Deener*, p. 326.
 Mr. Walter Curtis, for Appellant. *Merrill v. Yeomans*, p. 213.
 ———— for Appellee. *Cawood Patent*, p. 243.
 ———— for Appellant. *Glue Co. v. Upton*, 472.
 Mr. Theo. Cuyler, for Appellant. *Bridge Co. v. Iron Co.*, p. 382.
 Mr. Edward N. Dickerson, for Appellees. *Smith v. Goodyear D. V. Co.*, p. 11.
 ———— for Appellants. *Fuller v. Yentzer*, p. 155.
 ———— for Appellants. *Fuller v. Yentzer*, p. 190.
 Mr. A. Finch, for Appellant. *Schumacher v. Cornell*, p. 449.
 Mr. George Gifford, for Appellee. *Consolidated Fruit Jar Co. v. Wright*, p. 49.
 ———— for Appellants. *Cawood Patents*, p. 240.

- Samuel J. Glassey, for Appellants. *Dunbar v. Meyers*, p. 72.
 Mr. George Harding, for Appellee. *Meyer v. Pritchard*, p. 35.
 — — — — in support of motion. *Cochrane v. Denner*, p. 396.
 — — — — for Appellee. *Bridge Co. v. Iron Co.*, p. 385.
 — — — — for Appellants. *Union Paper Bag Machine Co. v. Murphy*, p. 503.
 Mr. Thomas P. How, for Appellants. *Cammeyer v. Newton*, p. 117.
 Mr. John N. Jewett, for Appellants. *Cawood Patent*, p. 240.
 Mr. L. Q. Keasby, for Appellants. *Rubber-Coated Harness-Trimming Co. v. Welling*, p. 483.
 Mr. A. Q. Keasbey, for Appellants. *City of Elizabeth v. The American Nicholson Pavement Co.*, p. 530.
 Mr. John H. B. Latrobe, for Appellants. *Consolidated Fruit Jar Co. v. Wright*, p. 46.
 Mr. B. F. Lee, for Appellees. *Smith v. Goodyear D. V. Co.*, p. 11.
 Mr. Wm. P. Lynde, for Appellant. *Schumacher v. Cornell*, p. 449.
 Mr. Jonathan Marshall, for Appellants. *Roemer v. Simon*, 350.
 Mr. Rodney Mason, for Appellee. *Mevs v. Conover*, p. 41.
 — — — — for Appellants. *Cochrane v. Deener*, p. 326.
 Mr. A. L. Merriman, for Appellees. *Cochrane v. Deener*, p. 328.
 Mr. John B. Niles, for Appellants. *Cawood Patent*, p. 240.
 Mr. Edward Patterson, for Appellant. *Mevs v. Conover*, p. 40.
 Mr. George Paysen, for Appellants. *Cawood Patent*, p. 240.
 Mr. Charles M. Reed, for Appellant. *Merrill v. Yeomans*, p. 213.
 — — — — for Appellee. *Cawood Patent*, p. 243.
 — — — — for Appellant. *Glue Co. v. Upton*, p. 472.
 Mr. A. G. Riddle, for Appellants. *Roemer v. Simon*, p. 350.
 Mr. George L. Roberts, for Appellee. *Glue Co. v. Upton*, p. 473.
 Mr. Walter B. Scates, for Appellees. *Fuller v. Yentzer*, p. 156.
 — — — — for Appellees. *Fuller v. Yentzer*, p. 191.
 Mr. C. A. Seward, for Appellee. *City of Elizabeth v. American Nicholson Pavement Co.*, p. 533.
 Mr. Chauncey Smith, for Appellant. *Merrill v. Yeomans*, p. 213.
 — — — — for Appellee. *Glue Co. v. Upton*, p. 473.
 Mr. Edwin B. Smith, for Appellees. *Cammeyer v. Newton*, p. 119.
 Mr. Horace E. Smith, for Appellant. *Russell v. Place*, p. 227.
 Mr. Edwin W. Stoughton, for Appellee. *Cawood Patent*, p. 243.
 Mr. A. J. Todd, for Appellant. *Mevs v. Conover*, p. 40.
 — — — — for Appellants. *Consolidated Fruit Jar Co. v. Wright*, p. 46.
 Mr. B. E. Valentine, for Robertson *et al.* *Robertson v. Blake*, p. 274.
 Mr. T. L. Wakefield, for Appellees. *Russell v. Place*, p. 228.
 Mr. Edmund Wetmore, for Appellant. *Glue Co. v. Upton*, p. 472.
 Mr. B. Williamson, for Appellee. *City of Elizabeth v. American Nicholson Pavement Co.*, p. 533.
 Mr. Whitney, for Appellee. *Werner v. King*, p. 434.
 Mr. H. C. Whitney, for Appellees. *Fuller v. Yentzer*, p. 156.
 — — — — for Appellees. *Fuller v. Yentzer*, p. 191.

DECISIONS·
OF
THE SUPREME COURT
OF
THE UNITED STATES.
IN
PATENT CASES.

DANIEL H. SMITH, APPELLANT, *v.* THE GOOD-
YEAR DENTAL VULCANITE COMPANY AND
JOSIAH BACON.*

93 (3 Otto) U. S. 486-502. Oct. Term, 1876.

[Bk. 23, L. ed. 952; 11 O. G. 246.]

Affirming Goodyear Dental Vulcanite Co. *v.* Smith, 1 Holmes, 354.

Argued November 22, 23, 24, 1876. Decided January 8, 1877.

Particular patent construed. Product. Invention. Prior English provisional application. Continuing application. Change of material. Evidence. Patent. First inventor. Date of English patent. Abandoned experiment. Reissue. Presumption from Commissioner's grant of reissue.

1. The claim of the Cummings reissued letters patent, No. 1,904, March 21, 1865. Original patent No. 43,009, June 7, 1864. "The plate of hard rubber or vulcanite, or its equivalent, for holding artificial teeth, or teeth and gums substantially as described," *construed* to be a new product, a new article of manufacture, made in a defined manner, the process being made by the claim as much a part of the invention as the ma-

*See Explanation of Notes, page III.

Syllabus.

terials of which the product is composed, consisting of a plate of hard rubber with teeth or teeth and gums, secured thereto, by embedding the teeth and pins in a vulcanizable compound, so that it shall surround them while it is in a soft state, before it is vulcanized, and so that when it has been vulcanized, the teeth are firmly and inseparably secured in the vulcanite, and a tight joint is effected between them, the whole consisting of but one piece; and *held* that devising and forming such a manufacture by such a process and of such materials was invention, although sets of artificial teeth had been previously mounted upon bases of other materials, the materials themselves were old, the steps in the process not all new, and the process of vulcanizing and of forming a plate by the use of molds were old; *held* not anticipated by an English provisional application filed prior to the domestic application but completed later; neither by an abandoned experiment; is for the same invention as the original and *held* that Cummings' application was a continuing one and the invention not abandoned by public use or sale pending such application. (p. 17.)

2. The case of *Hotchkiss v. Greenwood* (11 How. 248 [5 Am. & Eng. 240]), considered. That case does decide that employing one known material in place of another is not invention if the result be only greater cheapness and durability of the product. But this is all. It does not decide that no use of one material in lieu of another in the formation of a manufacture can, in any case amount to invention, or be the subject of a patent. If such a substitution involves a new mode of construction, or develops new uses and properties of the article formed it may amount to invention. The substitution may be something more than formal. It may require contrivance in which case the mode of making it would be patentable or the result may be the production of an analogous, but substantially different, manufacture. (p. 21.)
3. The use of one material instead of another in constructing a known machine is, in most cases, so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention unless some new and useful result, as increase of efficiency or a decided saving in the operation, be obtained. But where there is some such new and useful result, where a machine has acquired new functions and useful

Syllabus.

properties, it may be patentable as an invention, though the only change made in the machine has been supplanting one of its materials by another. This is true of all combinations, whether they be of materials or processes. (p. 22.)

4. The patent itself is *prima facie* evidence that the patentee was the first inventor, at least it casts upon him who denies it the burden of sustaining his denial by proof. (p. 24.)
5. Where the English provisional specification of the alleged prior patent was filed prior to the date of filing of that of the United States patent, but was completed subsequent thereto, *held* that the invention was not patented in England, so as to anticipate the invention patented in this country, until the completed specification had been filed. The date of filing the provisional specification was not to be considered. (p. 24.)
6. Casting sets of teeth on a tin base by a process similar to the process described in the complainant's patent was not an anticipation of the invention, it being shown that vulcanite may be used by dentists as a base for artificial teeth in many ways that could not be accomplished by tin, and that, therefore, the cast tin base was not substantially the same product as the Cummings manufacture. The cast tin base *held* in view of its defects, to have been an abandoned experiment, although several sets had been made. (p. 25.)
7. To sustain the position that a reissued patent is not a patent for the same invention which was described in the specification of the original patent, and, therefore, that the reissue is unauthorized and void, the defendant must overcome the presumption against him arising from the decision of the Commissioner of Patents in granting the reissue, and this he can do only by showing, from a comparison of the original specification with that of the reissue, that the former does not substantially describe what is described and claimed in the latter. This must plainly appear before the court can be justified in pronouncing the reissued patent void. (p. 25.)
8. Cummings applied for a patent on April 12, 1855. His application was rejected twice and on February 3, 1856, a third rejection followed a reconsideration. From that time till the patent was finally granted the applicant was in ill health and poor. He did not withdraw his application, nor acquiesce in

Statement of the case.

the action of the Patent Office. He made frequent applications to his friends for advances to enable him to prosecute his application. In February, 1859, an attempt was made for an appeal to the board, but the Commissioner refused to allow it. On March 1, 1864, he presented a petition for the grant of a patent for the same invention. The patent was granted on June 7, 1864. The invention went into public use in 1859. *Held*: (Justices BRADLEY, MILLER and FIELD dissenting) that the proceeding to obtain a patent was a continuous one from 1855 until it was granted; that the application of 1855 not being severable from that of 1864 there was no foundation for the allegation that the invention was abandoned to the public, and that it was in public use or on sale for more than two years prior to the inventor's application. There was no abandonment, actual or constructive. (p. 27.)

[Citations in the opinion of the court:]

Hotchkiss v. Greenwood, 11 How. 248 [5 Am. & Eng. 240]. pp. 18, 21.
Hicks v. Kelsey, 18 Wall. 670 [9 Am. & Eng. 150]. p. 22.
Crane v. Price, 1 Web. Pat. Cas. 393 [3 Am. & Eng. 473]. p. 23.
Kneass v. Schuylkill Bank, 3 Wash. 9. p. 23.
Godfrey v. Eames, 1 Wall. 317 [7 Am. & Eng. 174]. p. 27.
Bell v. Daniels, 1 Fish. 372. p. 27.
Blandy v. Griffith, 3 Fish. 609. p. 27.

Appeal from the Circuit Court of the United States for the District of Massachusetts.

The bill in this case was filed in the court below by the appellees, to recover for the alleged infringement of a certain patent. A decree having been entered in favor of the complainants, the respondent took an appeal to this court.

The case is fully stated by the court.

The specification and drawings of Cummings' reissued letters patent are as follows:

Statement of the case.

JOHN A. CUMMINGS, OF BOSTON, MASS., ASSIGN-
OR, BY MESNE ASSIGNMENTS, TO THE DENTAL
VULCANITE COMPANY, OF SAME PLACE.

IMPROVEMENT IN ARTIFICIAL GUMS AND PALATES.

Specification forming part of Letters Patent No. 43,009, dated June
7, 1864; Reissue No. 1,848, dated January 10, 1865; Reissue No.
1,904, dated March 21, 1865.

To all whom it may concern :

Be it known that I, John A. Cummings, of Boston, in
the county of Suffolk and State of Massachusetts, have in-
vented certain new and useful Improvements in Plates for
Artificial Teeth ; and I do hereby declare that the following
description, taken in connection with the accompanying
plate of drawings, hereinafter referred to, forms a full and
exact specification of the same, wherein I have set forth the
nature and principles of my said improvements, by which
my invention may be distinguished from all others of a
similar class, together with such parts as I claim and desire
to have secured to me by Letters Patent.

The method hitherto practiced of attaching artificial teeth
to a metallic plate fitting to the roof of the mouth is attended
with many objections and inconveniences, as the plate, be-
ing hard and unyielding, naturally hurts the mouth, and
in some degree impedes mastication and perfect articulation,
while the expense of the metal employed prevents many
from availing themselves of the advantage of artificial teeth.

My present invention consists in forming the plate to which
the teeth or teeth and gums are attached of hard rubber or
"vulcanite," so called—an elastic material possessing and
retaining in use sufficient rigidity for the purpose of masti-
cation, and at the same time being pliable enough to yield
a little to the motions of the mouth.

My manner of making and using said hard-rubber plates
is as follows: A wax or plaster impression of that part of

Statement of the case.

the mouth which the plate is to fit is first taken, and from that impression a plaster cast is made which will exactly resemble that part of the mouth from which the first impression was taken. A plate of wax of the general form of the intended rubber plate is then made from this plaster cast, and around the front of this wax plate a vertical ridge of wax is fixed about in the position which the teeth are to occupy, in the same manner as is generally practiced in the construction of gold plates for artificial teeth. A plaster mold is then made from this wax plate, fitting it both on the upper and under side, which plaster mold is known generally as the "articulator," and is constructed so as to hold the wax plate securely and conveniently for manipulation, leaving the front edge, where the teeth are to be applied, exposed and accessible.

The figures of the accompanying plate of drawings represent my improvements.

Fig. 1 is a front elevation of a set of artificial teeth and plate formed by my improved method. Fig. 2 is a view of the lower side of the plate and teeth. Fig. 3 is a central vertical section of the same.

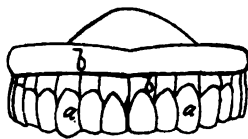
The teeth shown in the drawings are "gum-teeth," so called—that is, having porcelain gums formed in one piece with the teeth and properly colored—and they are shown each one separate; but they may be without porcelain gums, in which case the palate and gums will be formed in one piece of hard rubber, and if gummed teeth they may be formed in groups of two or more, as desired.

My mode of operation is the same whether gum-teeth or teeth alone are used, or separate or in groups. The teeth are set in place in the wax plate and adjusted to the proper distance and fullness in same manner as is generally practiced in setting teeth in gold plates.

In the drawings the gum-teeth are made separate and marked *a a*. The wax plate and gums, with the teeth adhering thereto, are now set upon the original plaster cast of the corresponding part of the mouth, and plaster is poured

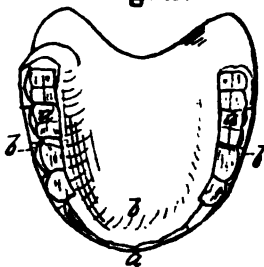
J. A. Cummings.
Artificial Gums & Palate.
No 1904. Reissued Mch 21. 1865.

Fig. 1



FRONT.

Fig. 2.



SOFFIT

Fig. 3.



SECTION.

Witnesses.

L. L. Corbitt
J. L. Corbitt

Inventor:

J. A. Cummings
by
J. B. Cook
his atty

Statement of the case.

all around up to about the lower edge (as it lies) of the wax plate. The margin or outlying surface of plaster is oiled or varnished, and plaster poured over the whole, forming a complete mold of the plate and teeth. Upon the opening of this mold the wax is warmed and removed, so as to leave the teeth adhering in the plaster mold in exactly the relative position they are to occupy in the hard-rubber plate. The teeth are provided with pins, *c c*, projecting therefrom in such manner that the rubber which is to constitute the plate will close around them and by means of them hold or secure the teeth permanently in position. The plaster mold, with the teeth adhering therein, as just described, is now filled with soft rubber, a little at a time, pressed in with the finger, or in other convenient way, and care is to be taken that the rubber is made to completely fit into the cavities and around the protuberance (including the pins), and is filled in to the thickness or depth desired to form the plate. I then lock the rubber plate in position by shutting the other half of the plaster mold over it to insure its retaining its exact form while warming, and then heat or bake it in an oven, or in any other suitable way.

The soft rubber or gum so inserted in the mold is to be compounded with sulphur, rubber, etc., in the manner prescribed in the patent of Nelson Goodyear, dated May 6, A. D. 1851, for making hard rubber, and is to be subjected to sufficient heat to vulcanize or harden it, substantially as directed in that patent. It is also to be colored in imitation of the natural gums by mixing it with vermilion, or other suitable coloring-matter, while in the soft state. After the plate has been heated sufficiently to harden it or convert it into hard rubber or "vulcanite," so called, the mold is removed and the plate is polished ready for use.

Having thus described the method I have used for making and using said hard-rubber or vulcanite plates, what I claim herein, and desire to secure by Letters Patent, is—

The plate of hard rubber or vulcanite or its equivalent,

Argument of counsel.

for holding artificial teeth or teeth and gums, substantially as described.

JOHN A. CUMMINGS.

Witnesses:

JOSEPH GAVETT,
SAML. M. BARTON.

Mr. Henry Baldwin, Jr., for appellant:

The decree of the court below is erroneous in adjudging that John A. Cummings was the original and first inventor of the improvement described and claimed in the reissued letters patent No. 1,904, dated March 21, 1865, for long prior to the patented invention thereof by said Cummings the same thing, or a substantial and material part thereof, was known to and used by the following named persons, and at the following named places, to wit: amongst others named, to Charles Goodyear, Jr., of New Rochelle, N. Y., at New York city, and at New Haven, Conn., and at London, England, and at Paris, France.

The pretended invention or improvement described and set forth and claimed in the said reissued letters patent, consists only in the substitution of a material well known and in public use long prior to the patented invention or discovery of said Cummings for other materials which had long theretofore been known and used for the same purposes, in the same mode, and by the same means described in said reissued letters patent, and such substitution of one material for another is not patentable subject matter for letters patent of the United States.

The appellant submits that there was no room left for any patentable invention in the process of forming a dental plate by simply filling an old and well known mold in an old and well known way, with an old and well known substance, and subjecting this packed mold to the vulcanizing temperature for the length of time prescribed in Goodyear's patent of May 6, 1851. *Tucker v. Spaulding*, 13 Wall. 453 [8 Am. & Eng. 474]; *Paper Collar Co. v. Van Deusen*, 23 Wall. 530 [10 Am. & Eng. 156].

Argument of counsel.

The appellant respectfully submits that the court below erred in its construction of the opinion of this court in *Hotchkiss v. Greenwood*, 11 How. 248 [5 Am. & Eng. 240]; and that the facts in this case leave no more discrimination possible between the rule actually laid down in that case and the rule applicable to this case, than if this were a patent for making a door knob of hard rubber or vulcanite.

The original and the reissue specifications are repugnant to each other upon comparison of the one with the other. The reissue entirely discards the mode or process described in the original, and the reissued product is not only the result of a process radically different from that described in the original patent, but it includes a substantially different element from that suggested in the original. It is submitted that this reissue is void under the rule of law, so definitely settled by this court, as to the effect of less glaring differences than are presented in this instance between the original and the reissued patents. *Gill v. Wells*, 22 Wall. 23 [9 Am. & Eng. 471].

Messrs. E. N. Dickerson and B. F. Lee, for appellees :

The great problem presented in the dental art, when Cummings made his invention in 1852, was, to "invent a dental plate which would be easily prepared, cheap and useful," and which would be free from defects incident to plates of gold, silver, and platinum, which were then the only plates in successful permanent use. Cummings conceived the idea that the problem could be solved by constructing a dental plate of the substance known as hard rubber, or vulcanite.

Following the traditions of his art, Dr. Cummings' first conception seems to have been to *make a base or plate of hard rubber*, and upon this completed plate to mount the teeth by fastening them into indentations left for that purpose. If Dr. Cummings had stopped at this point, even if he had used old and well known means to attach the teeth to the plate, his invention would have been clearly patentable.

Argument of counsel.

He would have produced a dental plate free from many of the objections to the existing dentures, and introduced into the manufacture of dental plates properties different in kind from those before known in such plates, and valuable for such plates, and would thus have invented a *new manufacture* within the doctrine laid down by Coltman, J., in *Walton v. Potter*, 3 Man. & Grang. 438, to wit: "A very useful application and adaptation of a substance, the properties and qualities of which, for that particular purpose, had never been known before; and therefore that it was properly the subject of a patent." Substantially the same proposition is also laid down by this court in *Gayler v. Wilder*, 10 How. 477 [5 Am. & Eng. 188]; *Hicks v. Kelsey*, 18 Wall. 673 [9 Am. & Eng. 150]; *Hotchkiss v. Greenwood*, 11 How. 265 [5 Am. & Eng. 240]; *Strong v. Noble*, 3 Fish. 586; *Rich v. Lippincott*, 2 Fish. 4; *Goodyear D. V. Co. v. Willis*, 7 Off. Gaz. 41; *Dalton v. Nelson*, 9 Off. Gaz. 1112; *Cornish v. Keene*, 4 Scott, 337 [2 Am. & Eng. 406].

Judge Emmons says (*Goodyear D. V. Co. v. Willis*, 7 Off. Gaz. 44): "The whole constitutes a product so substantially different from everything that has preceded it as to bring it within the true spirit of the law which protects property in useful inventions. We cannot take time to review the testimony of the experts. What Judge Shipley said of the record before him is literally applicable to that before us. He says, 'To overcome the presumption that it is a new manufacture arising from the grant of the letters patent, the respondent has not introduced the opinion of any expert who is willing, in view of the state of the art as known to him and proved in the case, to testify that this was not, at the date of the original application, a new manufacture.'"

He also says: "The whole profession had been earnestly directing its attention specifically to the object so successfully accomplished by this invention, yet no one, until Cummings suggested it, approximated the results he obtained, nor was this great improvement rapidly adopted. It made its way

Argument of counsel.

slowly against persistent opposition to nearly universal adoption. The proof develops no one instance of its use not traceable directly to knowledge derived from Cummings. However plausible may be the argument that because the properties of vulcanite were well known, and the mere forms of these plates and teeth familiar, the history of this invention demonstrates that, as a matter of fact, the highest skill of a learned profession not only failed to discover it originally, but required years of argument and experiment before they would adopt it. No case ever before us more eminently called for the application of the rule so frequently relied on to uphold the novelty of inventions, which deduces the fact of novelty from the extent of the revolution immediately resulting in that department of the arts in which they are employed."

He also adds: "It is also insisted that the complainant's manufacture was anticipated by several pre-existing dental plates. It is not deemed necessary to contrast any of these devices with that before us. It has been frequently done by other tribunals before which they have also been proved, and in every instance judicially pronounced to be wholly unlike that described in complainant's claim. *There is not sufficient similarity to demand at our hands a comparison.*"

Dr. Cummings filed with his original application in 1855, and with his renewed application in 1864, a model of his invention. No other mode of constructing his manufacture than that described in the reissue is suggested, and it is affirmatively proved that no other exists. So far, therefore, as his patent depends upon his mode of construction, that mode is suggested by the model, as well as by his original specification.

The defendant insists that Cummings abandoned his invention and dedicated the same to public use, and thereby forfeited his right to a patent. Is there any proof that he ever *actually* abandoned his invention to public use? Cumming's application was filed in 1855, and (after rejections by

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the Examiner) was rejected by the Commissioner in February, 1856. Whereupon he became entitled to *withdraw* his application or to "persist in his claim for a patent," or to appeal from the Commissioner.

Where there is no withdrawal by the applicant (and there was no withdrawal by Cummings), his case remains pending before the Patent Office, subject to appeal from the Commissioner or to review by the Commissioner. Dental Vulcanite Co. v. Wetherbee, 3 Fish. 87; Jones v. Sewall, 3 Pat. Off. Gaz. 630; Johnson v. Fassman, 2 Pat. Off. Gaz. 94; Clark v. Scott, 6 Blatch. 306; McMillin v. Barclay, 5 Fish. 189; Singer v. Braundsdorf, 7 Blatch. 521; Goodyear D. V. Co. v. Willis, 7 Off. Gaz. 41.

If it is pending before the Commissioner, he can, of course, review his own decision. In the present case, he did review it, and he reversed it on the ground that it was contrary to law. But the question of forfeiture must be considered as settled in favor of the complainants, by the numerous cases cited in the opinion of the court in the case of Goodyear D. V. Co. v. Willis, 7 Off. Gaz. 45.

As to the abandonment *in fact* the defendant furnishes no proof whatever on this point. Sole reliance is placed on the lapse of time. Lapse of time does not, *per se*, constitute abandonment. The burden of proof rests on the defendant to establish this defence. "The proof of actual abandonment, after application filed, ought to be indubitably clear." McMillin v. Barclay, 5 Fish. 189.

Mr. Justice STRONG delivered the opinion of the court:

A brief review of the history and nature of the patent, which the complainants allege has been infringed, will aid materially in solving the questions presented by this appeal. On the 14th day of May, 1852, Dr. John A. Cummings, a dentist of Boston, filed in the Patent Office a *caveat* to protect an invention he claimed to have made, of certain new and useful improvements in the setting and plates of artificial

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sets of teeth. The description accompanying the *caveat* indicated with very considerable clearness what the alleged invention was, and the objects sought to be gained by it. The improvement was declared to "Consist in forming the plate, and also the gums in which the teeth are inserted, of rubber, or some other elastic substance, so compounded with sulphur, lead and other similar substances as to form a hard gum, or whalebone gum, rigid enough for the purposes of mastication, and pliable enough to yield a little to the mouth." "By this improvement," the caveator said, "the teeth can be easily baked into the gums which form one piece with the plate." Subsequently, on the 12th of April, 1855, he applied for a patent, reciting in his application that he had previously entered a *caveat*. His accompanying specification declared the invention to consist in "forming the plate and gums to which the teeth are attached of rubber, or some other elastic material, so indurated as to be rigid enough for the purpose of mastication, and pliable enough to yield a little to the motions of the mouth, and in one piece, the teeth being embedded in the elastic material while the material is in a soft condition, and then baked with the gums and plate, so that the teeth, gums and plate will all be connected, forming, as it were, one piece." This application for a patent was rejected on the 19th of May next following; and the applicant was referred to two printed publications, one suggesting the use of gutta-percha as a base for artificial sets of teeth, and the other suggesting pastes, analogous to porcelain paste as well as gutta-percha. Cummings then amended his specification by striking out all reference to gutta-percha or other merely elastic material, disclaiming the use of gutta-percha, and any material which is merely rendered plastic by heat and hardened by cooling, and he claimed the improvement in sets of mineral, or other artificial sets of teeth which consists in combining the teeth with a rubber plate and gums, which, after the insertion of the teeth, are vulcanized by Good-

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year's process, or any other process, forming thereby a cheap, durable and elastic substitute for the gold plates theretofore used. This amendment, however, proved ineffectual. The application for a patent was again rejected; and a third rejection followed, a reconsideration for which the applicant had asked. This third rejection was on the 3d day of February, 1856. From that time onward for several years, indeed until the patent was finally granted, the evidence very satisfactorily shows that Dr. Cummings was in a condition of extreme poverty, utterly unable to bear the necessary expenses of prosecuting his case further. But he did not withdraw his application. He did not ask for a return of part of the fee he had paid, nor by any act of his did he indicate acquiescence in the unfavorable action of the Patent Office. On the contrary, he continued to assert his expectation of ultimately obtaining a patent, formed plans for his own action after it should be obtained, and complained of what he supposed to be the negligence of his solicitor. The proof of his extreme poverty is ample. His ill health interfered with his working successfully in the line of his profession, and his family was subjected to great privations. He seems never to have had any considerable money. He borrowed, sometimes, small sums to purchase under-clothing for himself. He made frequent applications to his friends for advances to enable him to prosecute his application for a patent, offering as a compensation for such advances sometimes one-quarter and sometimes one-half of the patent when obtained. He appears never to have remitted his efforts until, in 1864 he induced Dr. Flagg, who had been his partner in former years, and Dr. Osgood, to advance, first, \$100, and afterwards \$720, by means of which the patent was obtained. Even then he had not the \$20 necessary to be paid when it was allowed. For the assistance he thus received he gave one-quarter of his invention. Before this time, between the third rejection of his application and his obtaining the advances men-

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tioned, everything was done which was within his power. In February, 1859, in the midst of his pecuniary embarrassments, his solicitor applied to the Patent Office, not for a return of any portion of the fee paid, nor for a withdrawal of the application, but that the specification and one drawing might be sent to him. This request was refused. An attempt was then made for an appeal to the Board, but that not being allowed by the Commissioner, nothing further was done in the Patent Office until the applicant was enabled, by the funds obtained from Drs. Flagg and Osgood, to renew his endeavors. Then, on the 1st of March, 1864, he presented a petition for the grant of a patent to himself for the same invention which he had endeavored to secure in 1855 (the application for which remained in the office unwithdrawn), and accompanied his petition with a specification and drawings, corresponding exactly with those he had previously made. This final effort was successful. The office practically acknowledged that the prior rejection had been an error, and declared that, in justice to his rights as an inventor, the admission of his claim limited to the use of hard rubber or vulcanite, as he had before limited it, would not be objected to. Accordingly the patent was granted on the 7th of June, 1864, and by sundry conveyances it subsequently became vested in the complainants. Two surrenders and reissues have since been made, the last dated March 21, 1865, and it is for an alleged infringement of this second reissue that the present suit has been brought. The bearing of this history upon the merits of the controversy will appear as we proceed to examine the several defenses set up.

Among these the one, perhaps, most earnestly urged is the averment, that the device described in the specification was not a patentable invention, but that it was a mere substitution of vulcanite for other materials, which had previously been employed as a base for artificial sets of teeth, a change of one material for another in the formation of a product.

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If this is, in truth, all that the thing described and patented was, if the device was merely the employment of hard rubber for the same use, in substantially the same manner and with the same effect that other substances had been used for in the manufacture of the same articles, it may be conceded that it constituted no invention. So much is decided in *Hotchkiss v. Greenwood*, 11 How. 248 [5 Am. & Eng. 240]. But such is not our understanding of the device described and claimed. In the specification, it is declared that the invention "Consists in forming the plate to which the teeth, or teeth and gums, are attached, of hard rubber, or vulcanite, so called, an elastic material, possessing and retaining in use sufficient rigidity for the purpose of mastication, and at the same time being pliable enough to yield a little to the motions of the mouth." This is immediately followed by a description of the manner of the proposed use; that is, of making the hard rubber plates, and the claim, as stated, is "the plate of hard rubber, or vulcanite, or its equivalent, for holding artificial teeth, or teeth and gums, substantially as described;" that is, plainly formed, as described. The invention, then, is a product or manufacture made in a defined manner. It is not a product alone separated from the process by which it is created. The claim refers in terms to the antecedent description, without which it cannot be understood. The process detailed is thereby made as much a part of the invention as are the materials of which the product is composed. We shall not quote at large the description of the mode of making the plate. Such a quotation would unnecessarily prolong this opinion. It plainly shows a purpose of the inventor to secure what had not been secured before, a combination of a plate with artificial teeth, or with gums and teeth, in such a manner as to be free from the objections and defects or inconveniences attending the method before practiced of attaching such teeth to a metallic plate fitted to the roof of the mouth. Some of these objections are stated; such as expense, hurting the

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mouth, impeding mastication, and obstruction to perfect articulation. In carrying out the purpose proposed, the materials employed were all old. The teeth, the wax, the plaster, the molds, the soft rubber and the hard rubber, were none of them new. It is also true that the steps in the process were not all new. Plaster had been used for formation of molds. The process of forming a plate by the use of such molds was well known, and so was the process of converting a vulcanizable compound into vulcanite by heating it and allowing it to cool in molds. But the process of Dr. Cummings extended beyond the use of known materials and the employment of the processes mentioned. It was vulcanizing soft rubber in a mold, and in contact with artificial teeth inserted in place into it while it remained in a soft condition. It was well described by the Circuit Judge as "the making of a vulcanite dental plate out of a vulcanizable compound, into which the teeth were embedded in its plastic condition, and the rubber compound, with the teeth thus embedded in it, afterwards vulcanized by heat so that the teeth, gums and plate should be perfectly joined without any intervening crevices, and the plate should possess the quality of hard rubber or vulcanite." The combination thus resulted in a manufacture which was "one piece." If, then, the claim be read, as it should be, in connection with the preceding part of the specification, and construed in the light of the explanation which that gives, the invention claimed and patented is "a set of artificial teeth as a new article of manufacture, consisting of a plate of hard rubber, with teeth, or teeth and gums, secured thereto in the manner described in the specification, by embedding the teeth and pins in a vulcanizable compound, so that it shall surround them while it is in a soft state, before it is vulcanized, and so that when it has been vulcanized the teeth are firmly and inseparably secured in the vulcanite, and a tight joint is effected between them, the whole constituting but one piece." It is evident

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this is much more than employing hard rubber to perform the functions that had been performed by other materials, such as gold, silver, tin, platinum or gutta-percha. A new product was the result, differing from all that had preceded it, not merely in degree of usefulness and excellence, but differing in kind, having new uses and properties. It was capable of being perfectly fitted to the roof and alveolar processes of the mouth. It was easy for the wearer, and favorable for perfect articulation. It was light and elastic, yet sufficiently strong and firm for the purposes of mastication. The teeth, gums and plate constituting one piece only, there were no crevices between the teeth and their supporters into which food could gather, and where it could become offensive, and there could be no such crevices so long as the articles lasted. They were unaffected by any chemical action of the fluids of the mouth. Besides all this, they were very inexpensive as compared with other arrangements of artificial teeth. To us it seems not too much to say that all these peculiarities are sufficient to warrant the conclusion that the device was different in kind or species from all other devices. We cannot resist the conviction that devising and forming such a manufacture by such a process and of such materials was invention. More was needed for it than simply mechanical judgment and good taste. Were it not so, hard rubber would, doubtless, have been used in the construction of artificial sets of teeth, gums and plates long before Cummings applied for his patent. To find a material, with a mode of using it, capable of being combined with the teeth in such a manner as to be free from the admitted faults of all other known combinations, had been an object long and earnestly sought. It had been a subject for frequent discussion among dentists and in scientific journals. The properties of vulcanite were well known; but how to make use of them for artificial sets of teeth remained undiscovered, and apparently undiscoverable, until Cummings revealed the mode. But when revealed its value was soon

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recognized, and no one seems to have doubted that the resulting manufacture was a new and most valuable invention. The eminent dentists and experts examined in this case uniformly speak of it as such. Not one has ventured to testify that it was not an invention. They speak of it as "a novel and desirable thing;" as "the greatest improvement in dentistry" made in many years; and as an invention which is "a great benefaction to mankind, whereby both health and comfort are promoted." The evidence also shows that it has wrought a revolution in dental practice, and that many thousands of operators are using it in preference to older devices. All this is sufficient, we think, to justify the inference that what Cummings accomplished was more than a substitution of one material for another; more than the exercise of mechanical judgment and taste;—that it was, in truth, invention. Undoubtedly the results or consequences of a process or manufacture may in some cases be regarded as of importance when the inquiry is, whether the process or manufacture exhibits invention, thought and ingenuity. Webster, on the subject-matter of patents, page 30, says: "The utility of the change, as ascertained by its consequences, is the real practical test of the sufficiency of an invention; and since the one cannot exist without the other, the existence of the one may be presumed on proof of the existence of the other. Where the utility is proved to exist in any degree, a sufficiency of invention to support the patent must be presumed." We do not say, the single fact that a device has gone into general use and has displaced other devices which had previously been employed for analogous uses, establishes in all cases that the later device involves a patentable invention. It may, however, always be considered; and, when the other facts in the case leave the question in doubt, it is sufficient to turn the scale. >

We have, therefore, considered this branch of the case without particular reference to *Hotchkiss v. Greenwood*, 11 How. 248 [5 Am. & Eng. 240]. The patent in that case was

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for an improvement in making door and other knobs for doors, locks and furniture, and the improvement consisted in making them of clay or porcelain, in the same manner in which knobs of iron, brass, wood or glass had been previously made. Neither the clay knob nor the described method of attaching it to the shank was novel. The improvement, therefore, was nothing more than the substitution of one material for another in constructing an article. The clay or porcelain doorknob had no properties or functions which other doorknobs made of different materials had not. It was cheaper and, perhaps, more durable; but it could be applied to no new use, and it remedied no defects which existed in other knobs. Hence it was ruled that the alleged improvement was not a patentable invention. The case does decide that employing one known material in place of another is not invention, if the result be only greater cheapness and durability of the product. But this is all. It does not decide that no use of one material in lieu of another in the formation of a manufacture can, in any case, amount to invention, or be the subject of a patent. If such a substitution involves a new mode of construction, or develops new uses and properties of the article formed, it may amount to invention. The substitution may be something more than formal. It may require contrivance, in which case the mode of making it would be patentable; or the result may be the production of an analogous but substantially different manufacture. This was intimated very clearly in the case of *Hicks v. Kelsey*, 18 Wall. 670 [9 Am. & Eng. 150], where it was said, "The use of one material instead of another in constructing a known machine is, *in most cases*, so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention, *unless* some new and useful result, as increase of efficiency, or a decided saving in the operation, be obtained." But where there is some such new and useful result, where a machine has acquired new functions and useful properties, it may be

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patentable as an invention, though the only change made in the machine has been supplanting one of its materials by another. This is true of all combinations, whether they be of materials or processes. In Crane v. Price, 1 Webst. Pat. Cas. 393 [3 Am. & Eng. 437], where the whole invention consisted in the substitution of anthracite for bituminous coal in combination with a hot air blast for smelting iron ore, a patent for it was sustained. The doctrine asserted was, that if the result of the substitution was a new, a better or a cheaper article, the introduction of the substituted material into an old process was patentable as an invention. This case has been doubted, but it has not been overruled; and the doubts have arisen from the uncertainty whether any new result was obtained by the use of anthracite. In Kneass v. (Schuylkill) Bk. [4 Wash. C. C. 9], the use of steel plates instead of copper for engraving was held patentable. So has been the flame of gas instead of the flame of oil to finish cloth. These cases rest on the fact that a superior product has been the result of the substitution, a product that has new capabilities and that performs new functions. So in the present case the use, in the manner described, of hard rubber in lieu of the materials previously used for a plate produced a manufacture long sought but never before obtained, a set of artificial teeth, light and elastic, easily adapted to the contour of the mouth, flexible, yet firm and strong, consisting of one piece, with no crevices between the teeth and the plate, impervious to the fluids of the mouth, unaffected by the chemical action to which artificial teeth and plates are subjected when in place, clean and healthy, —peculiarities which distinguish it from everything that had preceded it. These differences, in our opinion, are too many and too great to be ascribed to mere mechanical skill. They may justly be regarded as the results of inventive effort, and as making the manufacture of which they are attributes a novel thing in kind and, consequently, patentable as such.

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A second objection urged by the defendant against the validity of the complainant's patent is alleged want of novelty of the invention ; and a strenuous effort has been made to convince us, that, although hard rubber had not been used in the manner described for the production of the manufacture, equivalent materials and processes had been, and that a plate substantially the same as that of Dr. Cummings had been made before his improvement. We are not, however, convinced. The patent itself is *prima facie* evidence that the patentee was the first inventor, at least it casts upon him who denies it the burden of sustaining his denial by proof. We do not find such proof in the case. Though the patent was not granted until June 7, 1864, the invention was completed at least as early as April 12, 1855, when the application for a patent was made. Indeed, as we have noticed, a *caveat* to protect it was filed on the 14th of May, 1852, which clearly foreshadowed the invention. Yet, taking the spring of 1855 as the time when it was completed, we find nothing in the proofs to justify a conclusion that Dr. Cummings was not the first inventor. It would answer no good purpose to review the voluminous evidence supposed to bear upon this branch of the case. We shall refer only to that which is deemed most important, and which has been most pressed upon us in this argument. Of the English patent of Charles Goodyear it is enough to say, that, though the provisional specification was filed March 14, 1855, the completed specification was not until the 11th of September following. It was, therefore, on the last mentioned date that the invention was patented.

The experiments made by George E. Hawes, it must be admitted, closely resembled the process described in the re-issued patent to the complainants. He cast in molds sets of teeth on a tin base, in a manner very like that in which the vulcanite plate is formed by the Cummings process. But the experiments resulted in nothing practical. Hawes cast sets of teeth for the lower jaw only, the weight of the

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metal making the plate unfit for the upper. In consequence of the shrinkage of the metal in cooling, a tight joint could not be obtained between the teeth and the base. The sets were, therefore, liable to become offensive in consequence of deposits of food and the secretions of the mouth in the crevices. The shrinkage also prevented a close fitting of the plate to the roof of the mouth, and the tin base was affected by the chemical action of the secretions. In consequence of these and other objections the manufacture was soon abandoned, and it may properly be considered an abandoned experiment. It not only was not the same manufacture as that of Cummings, but it was not suggestive of it; and Dr. Hawes, who cast the tin plates, testifies that the use of vulcanite for dental purposes is the greatest improvement in his profession that he knew of in twenty-five years. He adds, "That vulcanite may be used by dentists in many ways which could not be accomplished by tin or platinum." In his opinion, therefore, the cast tin base was not substantially the same thing as the Cummings manufacture. So, also, Dr. Royce, who cast plates of tin for artificial teeth in a manner very similar to that of Dr. Hawes, testifies that the solid tin base was found practically unfit for the purpose, except in rare instances. He made but a few sets, none after 1850, and adopted the vulcanite, agreeing to pay for a license to use it in manufacturing dental plates.

We need go no farther into a consideration of the various devices and publications offered to show that the manufacture patented was known before Cummings invented it. Suffice it to say, that none of them, in our opinion, suggest or exhibit in substance such a manufacture. The defence of want of novelty is, therefore, not sustained.

It is further insisted by the defendant that the reissued patent on which this suit is founded is not a patent for the same invention which was described in the specification of the original patent and, therefore, that the reissue is unauthorized and void. To sustain this position the defend-

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ant must overcome the presumption against him arising from the decision of the Commissioner of Patents in granting the reissue; and this he can do only by showing, from a comparison of the original specification with that of the reissue, that the former does not substantially describe what is described and claimed in the latter. This must plainly appear before we can be justified in pronouncing the reissued patent void. But this, in our judgment, does not appear. The first specification describes a set of artificial teeth having a hard rubber plate made by a process substantially the same as that indicated in the later patent. The description of the process is not quite so minute; but it is sufficiently full to be understood, and to enable an operator to make the manufacture. Certainly it is not another process; and as its result is the same, it is impossible to hold that the reissued patent is for a different invention from the one protected by the original patent. It is true, the specification of the reissue describes also another process not described in the specification of the first, namely, a mode of making the molds, but that is not claimed as a part of the invention.

The remaining defences to the bill rest mainly on the assumption that the new petition presented to the Patent Office in 1864 cannot be regarded as a continuation of the application made for a patent on the 12th of April, 1855. But this cannot be conceded. The history of the application, as we have given it, forbids such an assumption. No act of Cummings amounted to a withdrawal of his first petition, or to an acquiescence in its rejection. It is true, he filed a second petition in 1864; but he accompanied it with substantially the specification that remained in the office, and with the same drawings. It was a mode of procuring another consideration of his rejected claim; and the Commissioner regarded it as such. The act of March 2, 1861, gave him authority thus to regard it. He replied to the application, that his claim was embraced in an application filed by him

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in 1855, and rejected for want of novelty; admitted that it had been improperly rejected, and suggested an amendment to make it correspond with his former amended claim. It is impossible, in view of these facts, to regard the effort to obtain a new patent in 1864 as a new and independent application, disconnected from the application made in 1855. It was but one stage in a continuous effort. In *Godfrey v. Eames*, 1 Wall. 317 [7 Am. & Eng. 174], the first application was actually withdrawn, and a new petition was presented at the time of the withdrawal, with a different description of the invention; but as the thing patented under the second might have been engrafted as an amendment of the first, it was ruled that all the proceedings constituted one application. This court said: "If a party choose to withdraw his application for a patent, and pay the forfeit, intending at the time of such withdrawal to file a new petition, and he accordingly does so, the two petitions are to be considered parts of the same transaction, and both as constituting one continuous application." We are not aware that filing a second petition for a patent, after the first has been rejected, has ever been regarded as severing the second application from the first and depriving the applicant of any advantage he would have enjoyed had the patent been granted without a renewal of the application. The contrary was decided by the Circuit Court for the Southern District of Ohio, in *Bell v. Daniels*, 1 Fish. 372, and in *Blandy v. Griffith*, 3 Fish. 609; and these decisions are founded in justice and sound reason.

If, then, as we think it must be held, the proceeding to obtain the patent was a continuous one from 1855 until it was granted; if the application of 1855 is not severable from the proceedings of 1864, there is no foundation whatever for the allegation that the invention was abandoned to the public, and that it was in public use or on sale for more than two years before the inventor's application. The first use of it proved, by any other than Dr. Cummings, was in

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1859; and there is no evidence that this was with his consent. And the proof respecting his health and pecuniary condition, together with his constant efforts to obtain the necessary means to prosecute his right, rebuts all presumption that he ever abandoned, actually or constructively, either his invention or his application for a patent. That he never intended an abandonment of his invention is perfectly clear; and it was not his fault that granting the patent was so long delayed.

The conclusion of the whole matter is, that the patent is a valid one; and, therefore, that the decree of the Circuit Court should be affirmed.

The decree of the Circuit Court is affirmed.

Mr. Justice BRADLEY (*a*), dissenting:

I dissent from the judgment of the court in this case, on the ground that the patentee, having duly made his application for a patent in 1855, and the same having been three times rejected, must be considered as having abandoned the same, inasmuch as no further effort was made to obtain a patent until eight years afterwards, without any pretense that the patentee was engaged in perfecting his invention, and in the meantime the invention which he claims as his had come into general public use. The application for a patent made in 1864 was a new and independent application, and should be treated as such. As the public had enjoyed the use of the invention for more than two years prior to this application, the patent should be declared invalid. Great injustice will, in my judgment, be done to the public to allow a patent obtained under such circumstances to stand. The public had a right to suppose that no further application would be made. The levy of a tribute now on all the dentists of the country who have brought the plate into public notice and use seems to me a species of in-

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(*a*) Otto inserts "with whom concurred Mr. Justice MILLER and Mr. Justice FIELD."

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justice. The delay of the patentee, in fact, is made to operate to his benefit instead of his prejudice, his patent being made to run eight years longer than it would have done had it been granted when first applied for; so that the public is still further injured by sustaining the patent as finally granted. It is too common a case that associated companies, in order to maintain some valuable monopoly, look about to see what abandoned invention or rejected application, or ineffective patent, can be picked up, revamped, and carried through the Patent Office, and by the aid of ingenious experts and skilful counsel succeed in getting the desired protection. I think that the courts ought to be strict in maintaining the rights of the public in such cases. And the present case seems to me to be one in which we ought to hold the patent invalid as against those rights.

Mr. Justice MILLER and Mr. Justice FIELD concur in this dissenting opinion.

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Notes:

1. Product :

- Keystone Bridge Co. v. Iron Works, 95 U. S. 274 [p. 364
post].
Powder Co. v. Powder Works, 98 U. S. 126.
Goodyear D. V. Co. v. Davis, 102 U. S. 222.
Western Elec. Mfg. Co. v. Ansonia Brass Co., 114 U. S. 447.
Plummer v. Sargent, 120 U. S. 442.
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5. Date of English patent:

- O'Reilly v. Morse, 15 How. 62 [5 Am. & Eng. 483].
Siemens v. Sellers, 123 U. S. 276.
Telephone Cases, 126 U. S. 1.
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Foreign patent must antedate U. S. date of discovery :

Cochrane v. Deener, 94 U. S. 781.

City of Elizabeth v. Pavement Co., 97 U. S. 127.

6. An abandoned experiment will not defeat a subsequent patent :

Gayler v. Wilder, 10 How. 477 [5 Am. & Eng. 188].

Whiteley v. Swayne, 7 Wall. 685 [8 Am. & Eng. 70].

Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290].

Corn Planter Patent, 23 Wall. 181 [10 Am. & Eng. 1].

8. Abandonment subsequent to application:

Planing Machine Co. v. Keith, 101 U. S. 479.

Rifle and Cartridge Co. v. Whitney Arms Co., 118 U. S. 22.

Continuing application. See in addition to above:

Godfrey v. Eames, 1 Wall. 317 [7 Am. & Eng. 174].

Patent in suit:

No. 43,009. *Cummings, J. A.* June 7, 1864. Reissue No.
1,904. March 21, 1865. *Artificial Gums.*

OTHER SUITS ON SAME PATENT :

Goodyear D. V. Co. v. Wetherbee, 1866. 2 Cliff. 555 ; 3 Fish. 87.

Goodyear v. Hills, 1866. 3 Fish. 134.

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Goodyear D. V. Co. v. Gardner, 1870. 3 Cliff. 408; 4 Fish. 224.
Gardner v. Goodyear D. V. Co., 1873. 6 Fish. 329; 3 O. G. 295.
Goodyear D. V. Co. v. Smith, 1874. 1 Ban. & Ard. 201; 1 Holmes
354; 5 O. G. 585.
Goodyear D. V. Co. v. Root, 1874. 1 Ban. & Ard. 384; 6 O. G. 154.
Goodyear D. V. Co. v. Willis, 1874. 1 Flipp. 388; 1 Ban. & Ard.
568; 7 O. G. 41.
Goodyear D. V. Co. v. Van Antwerp, 1876. 2 Ban. & Ard. 252;
9 O. G. 497.
Goodyear D. V. Co. v. Flagg, 1876. 9 O. G. 153.
Goodyear D. V. Co. v. Osgood, 1877. 2 Ban. & Ard. 529; 13 O.
G. 325.
Goodyear D. V. Co. v. Davis, 1877. 3 Ban. & Ard. 115; 12 O. G. 1.
Goodyear D. V. Co. v. Preterre, 1878. 15 Blatch. 274; 3 Ban. &
Ard. 471; 14 O. G. 346.
Goodyear D. V. Co. v. Brightwell, 1879. MacA. & McK. 74.
Goodyear D. V. Co. v. Davis, 1880. 102 U. S. 222.

Cited:

IN SUPREME COURT IN :

Woodbury Planing Machine Co. v. Keith, 1880. 101 U. S. 479;
Bk. 25 L. ed. 939.
Goodyear Dental Vulcanite Co. v. Davis, 1880. 102 U. S. 222;
Bk. 26 L. ed. 149.
King v. Gallun, 1883. 109 U. S. 99; Bk. 27 L. ed. 870.
Railroad Co. v. Locomotive Co., 1884. 110 U. S. 495; Bk. 28 L.
ed. 222.
Mahn v. Harwood (Dis. Opin.) 1884. 112 U. S. 354; Bk. 28 L. ed.
665.
Cantrell v. Wallick, 1886. 117 U. S. 689; Bk. 29 L. ed 1017.

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IN CIRCUIT COURTS IN :

- Goodyear Dental Vulcanite Co. *v.* Benjamin, July, 1874. 1 Ban. & Ard. 384; 6 O. G. 154.
- United States Rifle & Cartridge Co. *v.* Whitney Arms Co., January, 1877. 14 Blatch. 94; 2 Ban. & Ard. 493; 11 O. G. 373.
- Eppinger *v.* Richey, September, 1877. 14 Blatch. 307; 3 Ban. & Ard. 69; 12 O. G. 714.
- Goodyear Dental Vulcanite Co. *v.* Davis, October, 1877. 3 Ban. & Ard. 115; 12 O. G. 1.
- Comstock *v.* Sandusky Seat Co., January, 1878. 3 Ban. & Ard. 188; 13 O. G. 230.
- Howes *v.* McNeal, August, 1878. 15 Blatch. 103; 3 Ban. & Ard. 376; 15 O. G. 608.
- Goodyear Dental Vulcanite Co. *v.* Preterre, September, 1878; 15 Blatch. 274; 3 Ban. & Ard. 471; 14 O. G. 346.
- Colgate *v.* Western Union Telegraph Co., November, 1878. 15 Blatch. 365; 4 Ban. & Ard. 36; 14 O. G. 943.
- Terry Clock Co. *v.* New Haven Clock Co., February, 1879. 4 Ban. & Ard. 121; 17 O. G. 909.
- Goodyear Dental Vulcanite Co. *v.* Brightwell, May, 1879. MacA. & McK. 74.
- Phillips *v.* City of Detroit, June, 1879. 4 Ban. & Ard. 347; 17 O. G. 191.
- United States Stamping Co. *v.* King, August, 1879. 17 Blatch. 55; 4 Ban. & Ard. 469; 7 Fed. Rep. 860; 17 O. G. 1399.
- American Diam. Rock Boring Co. *v.* Sheldon, November, 1879. 17 Blatch. 303; 4 Ban. & Ard. 603.
- Graham *v.* McCormick, March, 1880. 10 Biss. 39; 5 Ban. & Ard. 244; 11 Fed. Rep. 859; 21 O. G. 1533.
- Washburn & Moen Mnfgr. Co. *v.* Haish, December, 1880. 10 Biss. 65; 4 Fed. Rep. 900; 19 O. G. 173.
- Dedrick *v.* Cassell, October, 1881. 9 Fed. Rep. 306; 20 O. G. 1233; 14 Phila. Rep. 503.
- Kells *v.* McKenzie, November, 1881. 9 Fed. Rep. 284; 20 O. G. 1663.
- Lindsay *v.* Stein, February, 1882. 20 Blatch. 370; 10 Fed. Rep. 907; 21 O. G. 1613.

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- Coburn v. Schroeder**, March, 1882. 20 Blatch. 392; 11 Fed. Rep. 425; 22 O. G. 1538.
- Bell v. U. S. Stamping Co.**, January, 1884. 22 Blatch. 27; 19 Fed. Rep. 312.
- Welling v. Crane**, September, 1884. 21 Fed. Rep. 707; 29 O. G. 451.
- Cary v. Wolff**, February, 1885. 23 Blatch. 92; 24 Fed. Rep. 139; 32 O. G. 257.
- New York Bung & Bushing Co. v. Doelger**, March, 1885. 23 Blatch. 167; 23 Fed. Rep. 191; 32 O. G. 651.
- Celluloid Mnfg. Co. v. Tower**, September, 1885. 26 Fed. Rep. 451.
- Celluloid Mnfg. Co. v. Chrolithian C. & C. Co.**, November, 1885. 25 Fed. Rep. 482.
- Hill v. Biddle**, April, 1886. 27 Fed. Rep. 560.
- Asmus v. Alden**, May, 1886. 27 Fed. Rep. 684; 36 O. G. 231.
- Butler v. Bainbridge**, November, 1886. 29 Fed. Rep. 142.
- Consolidated Bunting Apparatus Co. v. Woerle**, January, 1887. 29 Fed. Rep. 449.
- Holliday v. Pickhardt**, January, 1887. 29 Fed. Rep. 853.
- Shaver v. Skinner Mnfg. Co.**, January, 1887. 30 Fed. Rep. 68; 41 O. G. 232.
- Hill v. Sawyer**, June, 1887. 31 Fed. Rep. 282.
- Emerson, Smith & Co. v. Lippert**, August, 1887. 42 O. G. 964.
- Celluloid Mnfg. Co. v. American Zylonite Co.**, September, 1887. 42 O. G. 961.
- Hat-Sweat Mnfg. Co. v. Davis Sewing Machine Co.**, October, 1887. 32 Fed. Rep. 401; 41 O. G. 1273.
- Bliss v. Merrill**, December, 1887. 33 Fed. Rep. 39.
- Tonduer v. Chambers**, January, 1889. 37 Fed. Rep. 333.

IN DECISIONS OF COMMISSIONER OF PATENTS IN:

- Smith v. Dimond**, July, 1881. 20 O. G. 742.
- Rumpff & Graessler v. Kohler v. Krugener**, November, 1882. 23 O. G. 1831.

Notes and Citations.

Ex parte Clarke, February, 1884. 26 O. G. 824.

Ex parte Gaboury, July, 1886. 37 O. G. 217.

IN TEXT BOOKS:

2 Abb. Pat. Laws. 1886, pp. 300, 313.

Walker on Pats. 1883, pp. 22, 30, 38, 60, 95, 130, 175.

Argument of counsel.

CHRISTOPHER MEYER AND MARY A. EVANS,
Administratrix of JOHN EVANS, Deceased, APPEL-
LANTS, v. STEPHEN PRITCHARD.*

Bk. 23, L. ed. 961. Oct. Term, 1876.

Submitted January 8, 1877. Decided January 15, 1877.

Surrender in order to reissue. Effect on antecedent suits. Reissue pending appeal.

1. The surrender of a patent extinguishes it, and it can no longer be the foundation of a legal right. The reissue has no connection with or bearing upon antecedent suits. The antecedent suits depend upon the patent existing at the time they were commenced, and unless it exists and is in force at the time of trial and judgment, the suit fails. (p. 36.)
2. Where since the appeal appellants surrendered and reissued the patent upon which suit was brought, *held* there was no longer any real or substantial controversy between the parties upon the issues, which have been joined and the appeal is dismissed. (p. 37.)

[Citations in the opinion of the court:]

Moffit v. Garr, 1 Black, 282 [7 Am. & Eng. 111]. p. 36.

Keedy v. Scott, 23 Wall. 364 [10 Am. & Eng. 133]. p. 36.

Cleveland v. Chamberlain, 1 Black, 426. p. 37.

Lord v. Veazie, 8 How. 255. p. 37.

Appeal from the Circuit Court of the United States for the Southern District of New York.

On motion to dismiss.

The case which arose in the court below, is sufficiently stated by the court.

Messrs. George Harding and J. Hervey Ackerman, for appellee:

By surrender of the letters patent, the right to maintain a bill which is founded thereon is entirely destroyed.

Woodworth v. Stone, 3 Story, 749; Moffitt v. Garr, 1 Black, 273 [7 Am. & Eng. 111].

*See Explanation of Notes, page III.

Opinion of the court.

This has recently been affirmed by this court in the case of *Reedy v. Scott*, 7 Off. Gaz., Pat. Off. 463, (23 Wall. 352 [10 Am. & Eng. 133]).

Messrs. Benj. F. Thurston and S. D. Law, for appellants:

The decree of the Circuit Court is a final decree, and the judgment, unless the same is reversed, must be executed. The decree stands still in force. The appeal does not vacate it.

The judgment rendered is *res judicata*. An appeal by either party to this court is for the sole purpose of ascertaining whether there is error in the judgment, and the decree of this court will be entered by the Circuit Court *nunc pro tunc*.

Springfield v. Worcester, 2 Cush. 52.

See, also, upon the practice of courts to enter their judgments as of a day prior, to prevent the failure of justice.

Brigham, Judgments, 95; *Key v. Goodwin*, 1 Moore & S. 620; *Ryghtmyre v. Durham*, 12 Wend. 245; *Perry v. Wilson*, 7 Mass. 395; *Mara v. Quinn*, 6 T. R. 1.

Mr. Chief Justice WAITE delivered the opinion of the court:

In *Moffitt v. Garr*, 1 Black, 282 [7 Am. & Eng. 111], we held that a surrender of a patent "Means an act which, in the judgment of the law, extinguishes the patent. It is a legal cancellation of it, and hence can no more be the foundation for the assertion of a legal right, after the surrender, than could an act of Congress which has been repealed.

* * * The reissue of the patent has no connection with or bearing upon antecedent suits; it has as to subsequent suits. The antecedent suits depend upon the patent existing at the time they were commenced, and unless it exists and is enforced at the time of trial and judgment, the suits fail." To the same effect is *Reedy v. Scott*, 23 Wall. 364 [10 Am. & Eng. 133]. We are satisfied with this ruling.

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Since the appeal in this case, the appellants, who represent the original patentees, have surrendered the patent upon which the suit was brought, and obtained a reissue. This fact is conceded. If we should hear the case and reverse the decree below, we could not decree affirmative relief to the appellants, who were the complainants below, because the patent upon which their rights depend has been canceled. There is no longer any "real or substantial controversy between those who appear as parties to the suit," upon the issues which have been joined, and for that reason the appeal is dismissed upon the authority of *Cleveland v. Chamberlain*, 1 Black, 426; and *Lord v. Veazie*, 8 How. 255.

The cause is remanded to the Circuit Court, to be dealt with as law and justice may require.

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Notes:

2. Surrender and reissue pending suit:

Moffitt v. Garr, 1 Black, 273 [7 Am. & Eng. 111].
Littlefield v. Perry, 21 Wall. 205 [9 Am. & Eng. 446].
Reedy v. Scott, 23 Wall. 352 [10 Am. & Eng. 133].
Mevs. v. Conover, Bk. 23 L. ed. 1008 [p. 39, *post*].
Peck v. Collins, 103 U. S. 660.

Patent in suit:

No. 111,962. Meyer & Evans. February 21, 1871. Re-issue No. 4,977, July 16, 1872. Rubber Over-shoes.

Notes and Citations.

OTHER SUITS ON SAME PATENT:

Meyer v. Pritchard, 1874. 12 Blatch. 101; 1 Ban. & Ard. 261; 7 O. G. 1012.

Meyer v. Goodyear Rubber Co., 1881. 20 Blatch. 91; 11 Fed. Rep. 891; 22 O. G. 681.

Statement of the case.

HENRY MEVS, -APPELLANT, v. JACOB A. CONOVER.*

Bk. 23, L. ed. 1008. Oct. Term, 1876.

[11 O. G. 1111.]

Argued January 19, 1877. Decided March 13, 1877.

Estimation of profits. Loss. Surrender in order to reissue. Reissue after final decree or judgment.

1. The profits are not all that an infringer made in the business in which he used the patented invention, but they are the worth of the advantage he obtained by such use—or, in other words, they are the fruits of that advantage. (*Mowry v. Whitney*, 14 Wall. 651 [9 Am. & Eng. 1]). (p. 42.)
2. Thus where no profits actually resulted from the infringing use by reason of the defective mechanism in combination with which the infringed device was employed; yet as the loss was less than it would have been with the infringed device omitted, this benefit is equivalent to an equal gain, and was rightly estimated as a part of the profits for which the infringer was responsible. (p. 42.)
3. The surrender of a patent extinguishes it, and after its surrender pending suits founded upon it fall with its extinguishment. (p. 43.)
4. If a patent is surrendered for reissue after final decree or judgment, the surrender has no effect upon a right passed previously into judgment. The right of the patentee then rests on his judgment or decree, and not on his patent. (p. 43.)

[Citations in the opinion of the court.]

Mowry v. Whitney, 14 Wall. 620 [9 Am. & Eng. 1]. p. 42

Appeal from the Circuit Court of the United States for the Southern District of New York.

The appellee was the complainant in the court below, where a decree was rendered in his favor; whereupon the respondent appealed to this court.

The case is sufficiently stated by the court.

* See Explanation of Notes, page III.

Argument of counsel.

Messrs. A. J. Todd and Edward Patterson, for appellant :

The Master, on a comparison with the hand-mode of feeding in the wood, should have taken the testimony with reference to what the appellant saved or gained by the aid of the machine that he actually had and used, and not with reference to the machine described in Conover's patent.

The decree only calls for an account of the gain *which the appellant has received*, hence a comparison between an efficient machine built directly after the patent, and an ordinary hand machine would not disclose what gains the appellant, by the use of his old and defective machine, has received.

That appellants' machine was old, worn out and very defective, is apparent even from the appellants' proof on examination of the witnesses. In addition to this exhibition of the defective and inferior condition of Mevs' machine, he himself testifies that he made no profit on that branch of the business, called the bundling-wood business, during the years 1866, 1867 and 1868, that he lost heavily in it, and only kept on to please his customers who bought other wood of him.

The burden of proof is on the complainant, and before he can have a decree for any stated sum, he must show that the appellant by the machine actually used effects a saving represented by that sum. Such proof alone can satisfy the order of reference to the Master in this case. A comparison with the machine described in the Conover patent, instead of appellant's machine, will not answer.

It has been brought to the knowledge of counsel for appellant since filing the foregoing brief, that the letters patent alleged to be infringed in this suit were reissued by the appellee after the appeal taken herein, and that said reissued letters patent bear date the 13th of July, 1875. (Citation served July 16, 1874. Rec. p. 49). Such being the case, it is respectfully submitted that an order should be made directing the Circuit Court to annul the final decree

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herein and dismiss the bill. Since no pending suit can be maintained so far as the old term of the patent is concerned, after reissue, a decree appealed from for the payment of money ought not to be enforced either.

Woodworth v. Stone, 3 Story, 750; Woodworth v. Hall, 1 Wood. and M. 257; Bloomer v. Stolley, 5 McLean, 158; Moffitt v. Garr, 1 Black, 283 [7 Am. & Eng. 111]; Reedy v. Scott, 23 Wall. 364, [10 Am. & Eng. 133].

Messrs. R. Mason and Peter Van Antwerp, for appellee:

The only questions, therefore, to be considered by the court, are, first—was complainant entitled to recovery from the appellant the amount of clear profits by way of savings or otherwise, by the infringement; and second, were the proofs before the Master sufficient to sustain his report, as modified and confirmed by his honor, Judge Blatchford.

As to the first point, it is assumed the law is too well and uniformly settled to require either argument or any reference to the authorities. On the second, as there were no exceptions to any rulings of the Master, as to the admission or rejection of any evidence, the matter must be determined on the evidence as it stands on the record.

The Master found that the appellant saved 75 cents per cord by the use of the machine. The evidence upon this point is as follows: "To the best of my opinion it costs 80 cents per cord less to split by the Conover machine. The wood would not be split as well as by the Conover machine." Cottrell, P., 18 Fol. 65.

From the testimony of J. S. Hessmann and G. Seimers it appears that the saving per cord was 75 cents. The appellant, upon the whole case, has no cause for complaint, because the evidence not only fully sustains the Master's report, as modified by his honor, Judge Blatchford, but had he kept account of his whole business, (of which the product of the machine is shown to have been an essential part), by which the profits could have been ascertained, the complainant would have been entitled to recovery, in

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addition, such portions thereof as he could have proven was due to the use of the machine, in addition to the mere savings. The judgment appealed from should be affirmed, with damages, interest and costs.

Mr. Justice STRONG delivered the opinion of the court:

The only errors assigned in this case are to the confirmation of the master's report, and they relate to the ascertainment of the profits which the defendant had made by his unauthorized use of the plaintiff's invention. That the machine employed by the defendant in splitting wood was an infringement of the plaintiff's patent, is established by the decree which sent the case to the master; and no complaint is made of that, but it is contended the master erred in reporting "There was saved to the defendant seventy-five cents per cord in the wood split by him and made into bundles." In the ascertainment of profits made by an infringer of a patented invention, the rule is a plain one. The profits are not all he made in the business in which he used the invention, but they are the worth of the advantage he obtained by such use; or, in other words, they are the fruits of that advantage.

Mowry v. Whitney, 14 Wall. 651 [9 Am. & Eng. 1].

We are not convinced that the rule declared in that case was not followed in this. The patented invention infringed by the defendant was a new and improved machine for splitting kindling wood, and a distinguishing feature of it, perhaps the principal feature, was a device for the automatic feeding of the wood to the reciprocating splitting knives or cutters, by a movable platform or apron carried forward by an endless chain. That device the defendant used, though it is said he used it in another machine known as Green's. The evidence is full and uncontradicted, that an advantage is gained in splitting kindling wood by a machine with that device, of at least seventy-five cents a cord over splitting it by hand, or without that device. It was in

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harmony with this evidence the master reported and the court decreed.

It is urged, however, that the Green machine, in which the defendant used the plaintiff's invention, was old and defective, and that no profits were actually received from such an use. But if such be the fact, if the defendant was a loser by splitting wood with the Green machine, his loss was less to the extent of seventy-five cents on each cord split than it would have been had he not used the patented invention. Such a result was equivalent to an equal gain, and it was rightly estimated as a part of the profits for which the infringer was responsible.

These observations are sufficient for the case. We notice, however, a suggestion made on behalf of the appellant that, since the decree in the Circuit Court, the patentee has surrendered the patent upon which the decree was founded, and obtained a reissue. This does not appear in the record, and if it did it would be immaterial. We have held that the surrender of a patent extinguishes it, and that after its surrender, pending suits founded upon it, fall with its extinguishment. The patent must remain unsurrendered, not only when a suit upon it is commenced, but at the time of trial and judgment. But a surrender after final judgment or decree can have no effect upon a right passed previously into judgment. After that there is nothing open for litigation. The right of a patentee then rests on his judgment or decree, and not on his patent. The suggestion, therefore, cannot avail the appellant, and the decree of the Circuit Court must be affirmed.

Decree affirmed.

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Notes :

1. Estimation of profits :

Rubber Co. v. Goodyear, 9 Wall. 788 [8 Am. & Eng. 150].

Philp v. Nock, 13 Wall. 185 [8 Am. & Eng. 470].

Mowry v. Whitney, 14 Wall. 434 [8 Am. & Eng. 506].

Notes and Citations.

Packet Co. v. Sickles, 19 Wall. 612 [9 Am. & Eng. 280].
Littlefield v. Perry, 21 Wall. 206 [9 Am. & Eng. 446].
Mason v. Graham, 23 Wall. 261 [10 Am. & Eng. 107].
Burdell v. Denig, 92 U. S. 716 [10 Am. & Eng. 421].
Elizabeth v. Pavement Co., 97 U. S. 127 [p. 514 *post*].
Root v. Railway, 105 U. S. 189.
Goulds Mnfg. Co. v. Cowing, 105 U. S. 253.
United States v. McKeever, 23 O. G. 1530.
Railroad Co. v. Turrill, 110 U. S. 301.
Garretson v. Clark, 111 U. S. 120.
Black v. Thorne, 111 U. S. 122.
Tilghman v. Proctor, 125 U. S. 136.

3. Surrender of a patent extinguishes it. See
Meyer v. Pritchard, Bk. 23 L. ed. 961, note [p. 35 *ante*].
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Cited :

IN SUPREME COURT IN :

Tilghman v. Proctor, 1888. 125 U. S. 136 ; Bk. 31, L. ed. 664.

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Argument of counsel.

THE CONSOLIDATED FRUIT JAR COMPANY, AP-
PELLANT, v. JAMES T. WRIGHT.*

94 (4 Otto) U. S. 92-97. Oct. Term, 1876.

[Bk. 24, L. ed. 68.]

Affirming *Ibid*, 12 Blatch. 149.

Argued January 18, 19, 1877. Decided January 29, 1877.

*Particular patent construed. Abandonment. Act 1839, sec. 7,
"purchase, sale, or prior use."*

1. Letters patent No. 102,913, J. L. Mason, May 10, 1870. Fruit Jar. *Held* abandoned by sale or use for more than two years prior to application for patent, Act 1839, sec. 7. (p. 50.)
2. Act 1839, sec. 7, "purchase, sale or prior use" is in the disjunctive "for more than two years" means earlier than two years prior. It follows that a single instance of sale or use by the patentee, may, under the circumstances, be fatal to the patent. (p. 52).

[Citations in the opinion of the court:]

Curt. Pat. (4th ed.) 696. p. 51.

Pitts v. Hall, 2 Blatch. 229. p. 52.

Am. Hide & L. Co. v. Am. Tool Co., 4 Fish. 234. p. 52.

M'Millin v. Barclay, 5 Fish. 189. p. 52.

McClurg v. Kingland, 1 How. 202 [4 Am. & Eng. 332]. p. 52.

Agawam Co. v. Jordan, 7 Wall. 583 [8 Am. Eng. 24]. p. 52.

Appeal from the Circuit Court of United States for the Southern District of New York.

The case, which arose in the court below, is fully stated by the court.

Mr. John H. B. Latrobe and A. J. Todd, for appellants :

The patent, although dated May 10, 1870, was applied for 15th of June, 1868, and the testimony carries back the date of the invention to the summer of 1859. Mere delay in taking out a patent unaccompanied by public use or sale of

* See Explanation of Notes, page III.

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the thing, with the consent and allowance of the patentee before the application, however long may be the interval between completion of the thing and the application, will have no effect upon the patent. *Ryan v. Goodwin*, 3 Sumn. 519. You cannot contend that if a man were to keep his invention shut up in his room for 20 years, that circumstance merely would deprive him of his right to obtain a patent for it. *Bentley v. Fleming*, 1 Car. & Kir. 587.

We think Judge Woodruff overlooked most material testimony. In his eighth conclusion when he returns to the subject in connection with the question of abandonment he says what may be proper to be noticed now, "there was no reason for this delay; if Mason entertained any purpose to pursue the invention or patent." Mason had patented many things, and had sold his patents to a certain Mitchell & Bennett for \$30,000; \$2,000 in cash and \$28,000 in notes secured by mortgage on the patents themselves. Some of the notes falling into the hands of L. R. Boyd, the mortgage was foreclosed and the title to Mason's patents became vested in Boyd. *To these patents, the invention of 1859 was subordinate*, and had Mason then taken out a patent, he would have been dependent upon others for the right to use it; and he was so advised by his counsel, W. P. N. Fitzgerald.

Judge Woodruff says "others, having no connection with Mason, had produced and given to the public the benefit of the device he now seeks to claim, had devoted time, and capital to its production and sale." Now the inference to be drawn from this, as regards what was in Judge Woodruff's mind is, that Mason instead of moving in the matter on the first notice that he had of the danger he ran, waited until others had demonstrated the value of his invention, and then went forward to deprive them of their reward,—to reap where they had sown. But the fact was not so. He saw a jar with a top secured in its place upon the gasket below the mouth of the jar by a thin metal screw-ring engaging in a screw on the neck of the jar; and seeing in this a sufficient approach to what he had done to warn him of

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other possibilities, he goes to his lawyer, in 1867—the same year recollect—to see about taking out his patent; his lawyer promises and dies, and he then goes to another, and the patent is obtained.

It is respectfully suggested that as this case unravels itself in its voluminous testimony, it corroborates the view that, at liberty to keep his invention to himself as long as he pleased, Mason proceeded to patent it within the two years, during which no purchase, sale, or use, without his knowledge or consent, prior to his application, could prejudice his right, or impair the validity of his patent when granted.

In the next place Mason's two years under the act of 1839 began to run on the 15th of January, 1866, two years prior to the date of his application; and the agreement under which Imlay and Rowley began to act *in concert*—an agreement of which there is no proof that Mason knew anything—and to make the "Hero" jar, sometimes with a tin, and then with a glass top, was not made until the 7th of March, 1866.

Abandonment must result from intention of the patentee expressly declared or clearly indicated by his acts. And if the lapse of years between the date of his application and of his patent, *and if his own conduct can be fully explained on any other hypothesis*, they ought not to be imputed to an intention on his part to abandon his intention.

McMillin v. Barclay, 5 Fish. 199.

This principle is well stated by Judge Drummond, in Sayles v. Chicago & N. W. R. R., 2 Fish. 253, where he says: "the patent law looks with *indulgence* upon the delays which arise *from the circumstances of the parties* who may make an invention; and it is only when the invention is intentionally abandoned or neglected, or the patentees show by their acts that they have not done all they can do, that the law declares that they shall not be protected in their invention."

The patent, however, when granted makes a *prima facie* case for the patentee, and the burden of proof is with the defendant to show such abandonment. American Hide Co.

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v. American Tool Co., 4 Fish. 299. The lapse of time between the perfection of the invention and the application is all, then, that is left by way of defence. This we have shown by authority is not sufficient in law of itself to invalidate the patent. But we have gone further, and shown that there was a valid and sufficient reason, recognized as such by the courts, in the case of *White v. Allen*, for the delay that took place, and which saved the patent, when granted, from the effect of a defense founded on the delay.

Mr. George Gifford, for appellee :

According to the testimony produced on the part of the appellant, the invention was completed by Mason and ready for use and sold and put into public use by him about nine years before he applied for a patent, which, in itself, constitutes an abandonment to the public. Even if Mason's own sale and use, added to his delay of nine years, had not dedicated his invention to the public, the production and public use of the invention by others during the time of his delay would constitute an abandonment.

It has been the uniform practice of the Patent Office ever since its establishment, to refuse a patent to the first inventor where such inventor had been guilty of great delay between the time of his invention and the time of his application for a patent, and where, in the meantime, the public had become in possession of the invention from some other source.

Commissioner Leggett, in 1874, refused a patent to an applicant because he delayed three years and four months before applying for a patent, after making an invention, and in the meantime the invention was made and the patent for it was obtained by another.

Bradford v. Corbin, 6 Pat. Off. Gaz. 223.

Whenever the question of the effect of long delay on the part of the inventor in applying for a patent has come up in the courts, it has been uniformly held that if the public, during such delay had become possessed of the invention,

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either by another patent, or a publication in a book, or by the invention going into use, such first inventor loses his right to a patent. Such decisions are in strict conformity with the policy and object of the patent laws, and any different administration of those laws would be in direct contravention of that policy and object. In the case of *Kendall v. Winsor*, 21 How. 322 [7 Am. & Eng. 1], the court say has been a standard reference on this subject for the last 15 years. The facts proved in this case also show that independently of the question of abandonment, Mason forfeited his right to a patent under the 7th section of the act of 1839, by making and selling the patented article for profit more than two years prior to his application for a patent. *Birdsell v. McDonald*, 6 O. G. 682; *Blandy v. Griffith*, 3 Fish. 617; *Sanders v. Logan*, 2 Fish. 173; *McMillin v. Barclay*, 5 Fish. 189; *American Hide Co. v. American Tool Co.*, 4 Fish. 291; *Sisson v. Gilbert*, 9 Blatch. 185; *Agawam Co. v. Jordan*, 7 Wall. 583 [8 Am. & Eng. 24]; *McClurg v. Kingsland*, 1 How. 202 [4 Am. & Eng. 382]; *Pitts v. Hall*, 2 Blatch. 229; *McCormick v. Seymour*, 2 Blatch. 240.

Mr. Justice SWAYNE delivered the opinion of the court:

This is a case in equity brought by the appellants to enjoin the appellee from infringing a patent issued by the United States to John L. Mason, on the 10th of May, 1870, for "an Improvement in Fruit Jars," of which patent the complainant is the assignee.

The disclaimer and claim of the patent are as follows:

"Separately considered, I do not claim a metallic flexible screw ring or cap, C, for holding a cover on a preserve jar, nor an external gasket-receiving shoulder upon preserve jar, except when such gasket shoulder is at the top of a continuous glass screw; neither do I claim the combination of a screw ring cap with a packing-ring, so applied to a jar that a portion of the whole of such packing-ring is exposed

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within the jar, nor when the gasket shoulder is at the base of the glass screw, as in my patent of 1858; but, what I do claim as new, and desire to secure by letters patent, is: "The combination, first, of the shoulder, *b*, to receive a gasket outside and a little below the top of the jar; second, of the cover, *B*, with the rim, *d*, extending down outside of the top, to press upon the gasket, *c*; and, third, of the screw-ring or screw-cap, *C*, with its screw-threads operating upon those of the jar below the gasket shoulder, all substantially as above set forth and described."

The screw-cap, *C*, is described in the patent as made of metal.

The answer sets up several defences. Our remarks will be confined to two of them.

(1) That there had been "purchase, sale and prior use" of the invention "more than two years prior" to the application for the patent.

(2) That the invention was abandoned to the public.

These objections are founded upon the 7th section of the Act of 1839.—Curt. Pat. 4th ed. 696.

The invention was completed in June, 1859. The application for the patent was made on the 15th of January, 1868. The intervening period was between eight and nine years. The two years prior to the application began on the 15th of January, 1866. It is within the limits of the tract of time first mentioned that the facts are to be sought upon which the second point is to be determined, and within the same period, less two years after the 15th of January, 1866, that those relating to the first point must have occurred, in order to avail the defendant.

There is no conflict in the testimony.

In June, 1859, Mason had a model made for his jar and cover, according to his invention. He took the model to Reed & Co., glass-makers, in Jersey City. They made for him at least two dozen of the jars. When they were done, Mason received five or six of them, and a short time after-

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wards, the residue. Of the first lot, he gave one to Reed and one to Fitzgerald, his lawyer. The others he took home. What became of them does not appear. Those of the second and larger lot he certainly sold. His recollection to this effect is distinct. He thinks he received for them three or four dollars a dozen. He does not know what was done with them. The inference is a fair one, that they were used for the purpose for which they were intended. His object in selling was twofold—to get the money which they yielded, and to test their salability in the market.

The statutory clause, upon which the second objection is founded, is in the disjunctive. The language is “purchase, sale, or prior use” * * * “for more than two years prior” to the application for the patent. The phrase, “*for more*,” as thus used, is loose and inaccurate, and is to be understood as if the language were *earlier than* “two years prior,” etc., or as if “*for*” were omitted from the sentence. This omission would produce the same effect.

The defects specified are also in the singular. It follows that a single instance of sale or of use by the patentee may, under the circumstances, be fatal to the patent; and such is the construction of the clause as given by authoritative adjudications.

In *Pitts v. Hall*, 2 Blatchf. 235, Mr. Justice NELSON said: “The patentee may forfeit his right to the invention if he constructs it and vends it to others to use, or if he uses it publicly himself in the ordinary way of a public use of a machine *at any time* prior to two years before he makes his application for a patent. That is, he is not allowed to derive any benefit from the sale or the use of his machine, without forfeiting his right, except within two years prior to the time he makes his application.” See, also, *Am. Hide & L. Co. v. Am. Tool Co.*, 4 Fish. 291; *McMillin v. Barclay*, 5 Fish. 189; *McClurg v. Kingsland*, 1 How. 202 [4 Am. & Eng. 382]; *Agawam Co. v. Jordan*, 7 Wall. 583; [8

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Am. & Eng. 24]. The result must always depend upon the purpose and incidents accompanying the act or acts relied upon.

If the case stopped here, the facts we have adverted to would be fatal to the patent, upon the ground of the first objection. But there are further facts developed in the testimony which bear upon this as well as the other point.

The model remained in the possession of Reed, one of the glass manufacturers, unnoticed and uncalled for by Mason until 1867. Not knowing where to find Mason, Reed then sold it at auction. The jar Mason had given him was sold at the same time and in the same way. This utter neglect of the model for so long a time is full of significance, and has an important bearing upon the question of abandonment.

No sufficient reason is disclosed in the record why the application for the patent was not made earlier. It was not for want of the necessary pecuniary means on the part of Mason. There is no proof of such want of means; and the contrary is shown by the fact of his getting a patent for a garbage box in the year 1867, or about that time. Mason's impression is, that when he took the jar to Fitzgerald, in 1859, the latter said that if patented he could not use the invention, because it would infringe earlier patents which he had parted with to others. He was asked when he next saw Fitzgerald. His answer was, "I think it was a number of years; probably eight or nine years. It was about the time he drew a specification for me for a garbage-box, which I received a patent for." When pressed to state why he did not apply for the patent earlier, he answered, "Well, I don't know as I had any reason or cause for not doing so." It appears that, when the specification for the garbage-box was prepared, Fitzgerald advised that a patent should be taken out for the fruit jar. Subsequently, when Mason had concluded to make the application, he went in quest of Fitzgerald, to get him to prepare the requisite papers, and found he was dead. He thereupon

Opinion of the court.

engaged the services of other counsel, and the application was made.

In the meantime, large interests had grown up in the way of the manufacture and sale of jars substantially the same with Mason's, and of others more or less like it. He was stimulated to make his application by seeing such jars in the market. He had seen them before Fitzgerald advised him finally to get a patent. Even then he failed to give any directions upon the subject. He reached his conclusion subsequently. Large amounts of money must then have been invested in the business of making and selling such jars by various persons. It is sufficient to mention the case of Rowley, who is defending this suit in the name of Wright, the appellee.

Rowley, in 1864, was selling jars known as the Excelsior. In the spring of 1866 he was called upon by Imlay, who charged that the Excelsior infringed a patent issued to him in 1865 which was for a jar such as the appellee is called to account in this case for selling. He bought from Rowley. Rowley took a license from Imlay, and thereupon commenced making and selling jars made according to Imlay's patent. These jars were nearly identical with those described in the Mason patent. A part of those sold had only glass tops, without the metallic covering, which Mason's patent called for. The residue had such covering. Prior to the beginning of the year 1868 he had sold of the jars with glass tops from 250 to 400 gross, making the minimum 36,000. Before the same period, he had sold a large number of those with the metallic top, and otherwise the same in construction. Thus, before Mason applied for his patent, and as early as 1866, the public was in possession of the invention in question from sources entirely independent of Mason.

It is enough to say, without recapitulating the facts, that, in our judgment, the defense of abandonment to the public is also clearly made out.

Notes and Citations.

He who is silent when he should speak must be silent when he would speak, if he cannot do so without a violation of law and injustice to others.

The supineness of the patentee is unexplained and inexcusable. A principle akin to the doctrine of equitable estoppel applies.

Inventors are a meritorious class. They are public benefactors. They add to the wealth and comfort of the community, and promote the progress of civilization. A patent for an invention is as much property as a patent for land. The right rests on the same foundation, and is surrounded and protected by the same sanctions. There is a like larger domain held in ownership by the public. Neither an individual nor the public can trench upon or appropriate what belongs to the other. The inventor must comply with the conditions prescribed by law. If he fails to do this he acquires no title, and his invention or discovery, no matter what it may be, is lost to him, and is henceforward no more his than if he had never been in anywise connected with it. It is made, thereupon, as it were by accretion, irrevocably a part of the domain which belongs to the community at large. The invention here in question is within this category.

The decree of the Circuit Court is affirmed.

94 U. S. 96-97.

Notes :

1. Abandonment by public use and sale :

- Pennock v. Dialogue, 2 Pet. 1 [4 Am. & Eng. 217].
- McClurg v. Kingsland, 1 How. 202 [4 Am. & Eng. 382].
- Gayler v. Wilder, 10 How. 477 [5 Am. & Eng. 188].
- Coffin v. Ogden, 18 Wall. 120 [9 Am. & Eng. 125].
- Elizabeth v. Pavement Co., 97 U. S. 126. [p. 514 *post*].
- Bates v. Coe, 98 U. S. 31.
- Egbert v. Lippman, 104 U. S. 333.
- Hall v. McNeale, 107 U. S. 90.
- Manning v. Cape Ann Co., 108 U. S. 462.

Notes and Citations.

Smith & Griggs Mnfg. Co. v. Sprague, 123 U. S. 87.
Andrews v. Hovey, 123 U. S. 267.

By foreign use :

Shaw v. Cooper, 7 Pet. 292 [4 Am. & Eng. 286].
O'Reilly v. Morse, 15 How. 62 [5 Am. & Eng. 483].
Roemer v. Simon, 95 U. S. 214.

Burden of proof on defendant :

Cantrell v. Wallick, 117 U. S. 689.

Subsequent to application .

Planing Machine Co. v. Keith, 101 U. S. 479.
Rifle and Cartridge Co. v. Whitney Arms Co., 118 U. S. 22.

2. Act 1839, sec. 7; Act 1870, sec. 37; R. S. sec. 4899.

Patent in suit:

No. 102,913. Mason, J. L. May 10, 1870. Fruit Jar.

Notes and Citations.

OTHER SUITS ON SAME PATENT :

Consolidated Fruit Jar Co. *v.* Wright, 1874. 12 Blatch. 149 ; 1
Ban. & Ard. 320 ; 6 O. G. 327.

Cited :

IN SUPREME COURT IN :

Egbert *v.* Lippman, 1881. 104 U. S. 333 ; Bk. 26 L. ed. 755.
Worley *v.* Loker Tobacco Co., 1882. 104 U. S. 340 ; Bk. 26 L.
ed. 821.
Manning *v.* Cape Ann Isinglass and Glue Co., 1883. 108 U. S. 462 ;
Bk. 27 L. ed. 793.
Andrews *v.* Hovey, 1888. 124 U. S. 694.

IN CIRCUIT COURTS IN :

Sprague *v.* Adriance, October, 1877. 3 Ban. & Ard. 124.
Henry *v.* Providence Tool Co., October, 1878. 3 Ban. & Ard. 501.
Colgate *v.* Western Union Telegraph Co., November, 1878. 15
Blatch. 365 ; 4 Ban. & Ard. 36.
The Driven Well Cases, May, 1883. 5 McC. 181 ; 16 Fed. Rep.
387 ; 26 O. G. 1011.
Consolidated Fruit Jar Co. *v.* Bellaire Stamping Co., April, 1886.
27 Fed. Rep. 377.
Kittle *v.* Hall, January, 1887. 28 Fed. Rep. 508.
United States Electric Lighting Co. *v.* Consolidated Electric Co.,
February, 1888. 33 Fed. Rep. 869.

IN DECISIONS OF COMMISSIONER OF PATENTS IN :

Harmet *v.* Reese, May, 1882. 21 O. G. 1875.

[illegible]

Syllabus.

JOHN DUNBAR AND JEREMIAH HOPPER, APPELLANTS, v. MARGARET MEYERS, EXECUTRIX, ETC., AND EUGENE S. EUNSON.*

94 (4 Otto) U. S. 187-202. Oct. Term, 1876.

[Bk. 24, L. ed. 34 ; 11 O. G. 35.]

Reversing *Meyers v. Dunbar*, 8 Blatch. 446.

Argued December 7, 1876. Decided December 18, 1876.

Disclaimer. Construction of patents. Particular patent construed. Invention. Duplication. Improvement. Patentability. Mechanical skill. Combination. Infringement.

1. A disclaimer properly made, attested and recorded, becomes a part of the specification to the extent of the interest of those who make it, but will not effect any action pending at the time of its being filed, except as to unseasonable neglect or delay in filing it. (p. 76.)
2. The disclaimer must be taken into account in construing the patent, except when its effect is to enlarge the nature of the invention and prejudice the rights of the respondent. (p. 77.)
3. Matters properly disclaimed cease to be a part of the invention, and render the same as if such matters had never been included. (p. 78.)
4. It appearing that one deflecting plate, in combination with a circular saw, was old, and that it required only mechanical skill to apply one to the opposite side : *Held*, that claim 1 of the improvement, letters patent No. 10,965, Meyers and Eunson, May 23, 1854, Sawing Machine, described as the employment or use of two deflecting plates, one placed on each side of the circular saw, for the purposes set forth in the specification, is void, because it does not constitute a patentable invention, and *held* that the 4th claim was not infringed, respondents having omitted one element of the combination claimed. (p. 79.)
5. The question whether or not an alleged improvement is or is not

*See Explanation of Notes, page III.

Syllabus.

- patentable is, in an equity suit, a question for the court. (p. 80.)
6. Invention or discovery constitutes the foundation of the right to obtain a patent, and nothing short of this will support it. (p. 80.)
 7. The degree of skill and ingenuity required in making or applying an alleged improvement, must be more than are possessed by an ordinary mechanic acquainted with the business in order to constitute invention. (p. 81.)
 8. A patented combination is not infringed by a machine in which one of the ingredients is omitted. (p. 86.)

[Citations in the opinion of the court] :

- Perry v. Skinner, 1 Web. Pat. Cas. 250. p. 77.
 Ralston v. Smith, 9 C. B. (N. S.) 117; 11 C. B. (N. S.) 471. p. 77.
 Smith v. Nichols, 21 Wall. 112 [9 Am. & Eng. 425]. pp. 77, 83.
 Guyon v. Serrell, 1 Blatch. 244. p. 77.
 Hall v. Wiles, 2 Blatch. 194. p. 77.
 Seed v. Higgins, 8 El. & Bl. 755. p. 77.
 O'Reilly v. Morse, 15 How. 62 [5 Am. & Eng. 483]. p. 77.
 Taylor v. Archer, 8 Blatch. 315. p. 77.
 Collar Co. v. Van Deusen, 23 Wall. 530 [10 Am. & Eng. 156]. p. 81.
 Hotchkiss v. Greenwood, 11 How. 248 [5 Am. & Eng. 240]. p. 81.
 Phillips v. Page, 24 How. 164 [7 Am. & Eng. 97]. p. 82.
 Jones v. Morehead, 1 Wall. 155 [7 Am. & Eng. 165]. p. 82.
 Stimpson v. Woodman, 10 Wall. 117 [8 Am. & Eng. 221]. p. 82.
 Hicks v. Kelsey, 18 Wall. 670 [9 Am. & Eng. 150]. p. 83.
 Brown v. Piper, 91 U. S. 38 [10 Am. & Eng. 272]. p. 83.
 Howe v. Abbott, 2 Story, 190. p. 84.
 Bean v. Smallwood, 2 Story, 408. p. 84.
 Glue Co. v. Upton, 6 O. G. 837. p. 84.
 Ralston v. Smith, 11 H. L. Cas. 223. p. 84.
 Harwood v. R. R. Co., 11 H. L. Cas. 654. p. 84.
 Jordan v. Moore, L. R. 1 C. P. 624. p. 84.
 Kay v. Marshall, 8 Cl. & F. 245 [3 Am. & Eng. 299]. p. 84.
 Bush v. Fox, 5 H. L. Cas. 707. p. 84.
 Tetley v. Easton, 2 C. B. (N. S.) 706. p. 84.
 Horton v. Mabon, 12 C. B. (N. S.) 437. p. 84.
 Ormson v. Clarke, 14 C. B. (N. S.) 475. p. 84.
 Parkes v. Stevens, L. R. 8 Eq. 358; L. R. 5 Ch. App. 36. p. 84.
 Envelope Co. v. Seymer, 5 C. B. (N. S.) 164. p. 84.
 White v. Toms, 17 L. T. (N. S.) 348. p. 84.
 Ormson v. Clarke, 13 C. B. (N. S.) 337. p. 84.

Statement of the case.

Sanders v. Aston, 3 B. & Ad. 881 [1 Am. & Eng. 466]. p. 84.

Gould v. Rees, 15 Wall. 187 [9 Am. & Eng. 39]. p. 86.

Prouty v. Ruggles, 16 Pet. 336 [4 Am. & Eng. 351]. p. 86.

Vance v. Campbell, 1 Black, 427 [7 Am. & Eng. 117]. p. 86.

Gill v. Wells, 22 Wall. 1 [9 Am. & Eng. 471]. p. 86.

Appeal from the Circuit Court of the United States for the Southern District of New York.

The bill in this case was filed in the court below, by the appellees, for an injunction and other relief against the alleged infringement of a certain patent. A decree having been entered in favor of the complainants, the respondents took an appeal to this court.

The case is fully stated by the court.

The specifications and drawings of the Myers and Eunson letters patent are as follows :

JOHN MYERS AND ROBERT G. EUNSON, OF NEW YORK, N. Y.

Letters Patent No. 10,965. Dated May 23, 1854.

The schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known, that we, John Myers and Robert G. Eunson, of the city, county and State of New York, have invented certain new and useful improvements in Machines for Sawing Lumber into thin stuff for mirror backs, picture frame backs, etc., etc., and we do hereby declare that the following is a full, clear and exact description of the construction and operation of the same, reference being had to the annexed drawings making a part of this specification, in which

Fig. 1 is a plan or top view of our improved machine.

Fig. 2 is a side elevation of ditto.

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Fig. 3 is a side view of the circular saw, and one of the deflecting plates which covers the upper part of the stiffening plate of the saw.

Fig. 4 is a vertical section of the circular saw, deflecting plates and guide troughs. The plane of section being through the center of the saw and transversely with the guide troughs.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain new and useful improvements in machines for sawing lumber into thin stuff for mirror and picture frame backs and other purposes for which thin stuff is used.

The nature of the invention consists: 1st. In the employment, or use of deflecting plates—one or two—placed at the sides of a circular saw for the purpose of preventing the sawed stuff from coming in contact with the sides of the saw, and enlarging or expanding the saw kerf, and thereby preventing the stuff from binding against the edge of the saw near its teeth. The deflecting plates also allow the saw to be stiffened by a proper plate secured to it, and a thin veneer saw may consequently be employed, which will cause but a small waste of stuff in sawing, as a narrow kerf is made thereby.

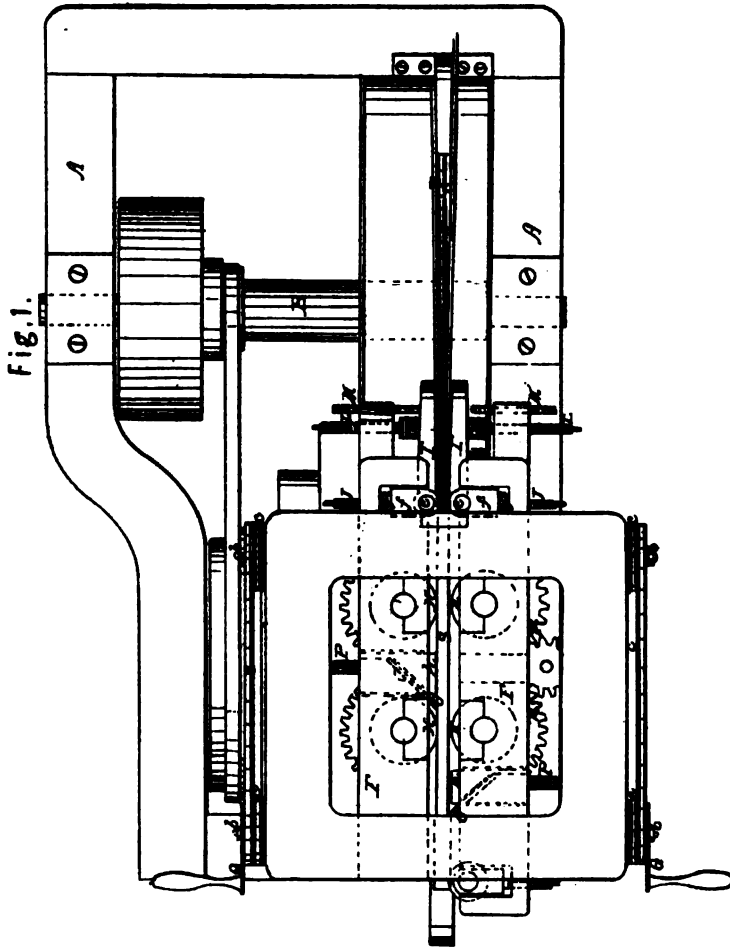
2d. Our invention consists in the employment or use of elastic clamps attached to the ordinary adjustable and elastic beds between which the stuff is fed to the saw. The clamps above mentioned have an elasticity independent of the beds, and compensate for the varying thickness of the different pieces of stuff to be sawed, by holding firmly the extreme end of the stuff, and keeping it in proper position to the saw, however much the elastic beds may be expanded by a succeeding piece of stuff of greater thickness.

3d. Our invention consists in the employment or use of knives or cutters secured to the adjustable beds, and so arranged as to cut or smooth off the rough and projecting

J. Myers & R. G. Eunsou.

No 10.965.

Patented May 23. 1854.



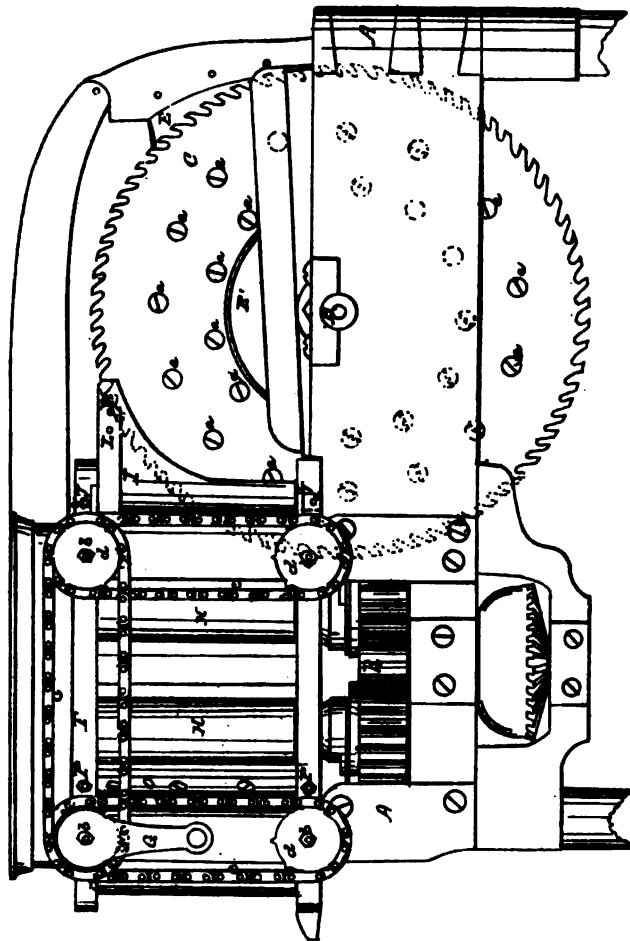
J. Sheets.
Sheet 2.

J. Myers & R. G. Eunson.
Sawing thin boards.

No 10,965.

Patented May 23, 1854.

Fig. 2.



J. Myers & F. G. Eunson.

*of Sheets
Sheet. 8.*

Sawing thin boards.

No 10,965.

Patented May 23, 1854.

Fig. 3.

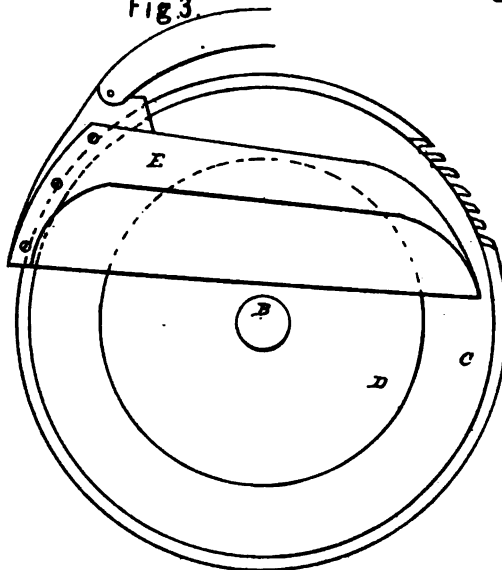
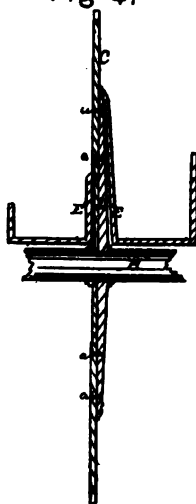


Fig. 4.



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sides of the stuff at the ends, making it of uniform thickness.

4th. Our invention consists in the combination of an adjustable bed and circular saw, arranged as will be hereafter shown.

To enable others skilled in the art to make and use our invention, we will proceed to describe its construction and operation:

A, is a frame, which may be constructed in any proper manner.

B, is a shaft running transversely across the front part of the frame, on which shaft a circular saw, C, is placed.

The saw C, is formed of thin steel plate, and is such as is used for sawing veneers. On one side of this saw, a circular plate D, is secured by rivets, or screws (*a*), the plate being somewhat less in diameter than the saw, see Figs. 3 and 4. The plate D, stiffens the saw, and without its use, a comparatively much thicker saw would be required.

E, E', are deflecting plates, placed one at each side of the saw. The deflecting plate E, covers the upper part of the stiffening plate D, as shown in Figs. 3 and 4, and the inner end does not project outward from the saw C, quite as far as the outer end, as shown in Fig. 1. The other deflecting plate E', on the opposite side of the saw, is rather smaller in diameter, than the deflecting plate E, and projects from the saw, at about an equal distance at both ends.

F, F, Figs. 1 and 2, are two feed roller beds placed vertically in the back part of the frame A, and parallel with each other. Both of these beds are made adjustable by means of screw-rods (*b*), which bear against the sides of the beds, the screw-rods of each bed, being operated simultaneously by means of chains (*c*), passing around small toothed wheels (*d*), see Fig. 2, at the ends of the screw-rods, see Fig. 2.

G, G, are cranks, one of which is attached to one of the toothed wheels (*d*) of each bed. The beds also have a late-

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ral elasticity given them by means of India-rubber, or other springs attached to them in any proper manner.

H, H, H, H, are feed-rollers in placed in the beds F, F, two rollers in each bed, see Figs. 1 and 2. The feed-rollers project some distance beyond the inner edges of the beds, as shown in Fig. 1.

I, I, are clamps attached to the inner ends of the beds F, F. At the back part of each clamp there are two journals (*e*), (*e*), see Fig. 1, one at the top and one at the bottom, see dotted lines, Fig. 2. These journals fit in boxes (*f*), (*f*), which work or slide in recesses in the top and bottom pieces of the beds. The top boxes are shown in Fig. 1.

J, J, are set-screws which pass transversely through the top and bottom pieces of each bed. The inner ends of these set-screws bear against India-rubber springs (*g*) which are placed directly back of the boxes, as shown in Fig. 1.

K, K, Fig. 1, are India-rubber springs at the top of the clamps, one spring to each clamp. These springs are placed between the clamps and set-screws L, L, which pass transversely through the top pieces of the beds F, F.

M, M, are stops which pass through the top pieces of the beds—one through each top piece. The stops regulate the distance of the lateral vibration of the clamps.

O, O, are knives or cutters placed vertically in the beds, F, F, one knife or cutter in each bed. The top and bottom of the cutters are fitted in slides (*h*) (*h*) see Fig. 1, in which the top slides are shown, which fit in the top and bottom pieces of the beds, and are regulated by set-screws, P, P. The cutting edges of the knives or cutters are on a line with the edges of the feed-rollers H. Motion is given to the feed-rollers H, by proper gearing, R, at the lower part of the rollers.

Operation: The beds F F, are adjusted relatively to the saw C, so that the stuff may be sawed into the desired thicknesses. Either side of the saw may be made the "line side" by fixing permanently, or destroying the elasticity of the proper roller bed. The stuff S, see Fig. 1, is placed be-

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tween the feed rollers H, in the beds, F, F, and motion being communicated to the saw and feed rollers, the stuff is fed towards the saw, and cut by it; the two pieces being prevented from bearing against the sides of the saw by means of the deflecting plates E, E', see Fig. 1. When the outer end of the stuff has passed the innermost feed roller, the clamps I, I, bear against the stuff, and hold it in a proper relative position to the saw. A fresh piece of stuff is now placed between the feed rollers—the lateral piece of stuff forcing forward the preceding piece. If the last piece of stuff is rather thicker than the preceding piece, it merely acts upon the beds, and forces the elastic one farther from the permanent one, without effecting the clamps which have an independent elasticity, owing to the springs (g), K.

The knives or cutters O, O, cut, or smooth off, to an equal thickness, the extreme ends of the stuff which is split, and not sawed—the usual practice in saw mills.

We will suppose that the stuff S, Fig. 1, is two inches in thickness, and it is desired to saw it into two strips; one of which is to be one-quarter inch in thickness—the one-quarter inch strip being the thinnest, may be deflected by the plate E, as it is inclined, or projects outwards from the same, farther than the plate E'. The roller bed, in line with the deflecting plate E, is permanently fixed at one quarter of an inch from the side of the saw. The opposite bed, being elastic, the side of the saw on which the thin strip passes, is the "line side." The opposite of the saw may be made the "line side," by permanently fixing the opposite roller bed, and allowing the other one to remain elastic.

By the above improvements, we are enabled, first, to employ a thin veneer saw, and consequently, a small amount of stuff is lost, as the saw kerf is narrow. This is an object in sawing thin stuff. Second, the stuff to be sawed is always kept in a proper relative position to the saw when varying in thickness, and the ends of each piece of stuff is smoother, or reduced to an equal thickness, before it leaves the feed rollers.

Argument of counsel.

We do not claim the adjustable and elastic roller beds, F, F, for they have been previously used. But what we claim as new, and desire to secure by Letters Patent, is:

1st. The employment or use of the deflecting plates E, E', one or both placed at the sides of the saw, as herein shown, for the purpose of preventing the sawed stuff from bearing against the sides of the saw, and expanding the saw kerf, and also for the purpose of allowing a thin veneer saw to be stiffened by plates D', one or two, as desired.

2d. We claim the employment, or use, of the clamps I, I, arranged as herein shown, or in an equivalent way, so as to have a lateral elastic movement independent of the roller beds, to which said clamps are attached, for the purpose of compensating for the varying thickness of different pieces of stuff, and keeping them in a proper relative position to the saw.

3d. We claim the knives, or cutters O, O, placed in the roller beds F, F, and arranged substantially as herein shown and described, and for the purpose as set forth.

4th. We claim the employment of an adjustable bed F, with clamps, as described, in combination with the saw C, when the saw has a stiffening plate E, in line with said bed, by which the stiffened, or rounded side of the saw, is made the "line side."

JOHN MYERS,
ROBERT G. EUNSON.

Witnesses:

S. H. WALES,
JNO. W. HAMILTON.

Messrs. Charles F. Blake and Samuel J. Glussey, for appellants:

The first claim of the patent No. 10,965, Meyers and Eunson, is void if construed to be for *two* deflecting plates as distinguished from one in combination with the saw. And it is also invalid because there is no such description or explanation of the construction or operation of the de-

Argument of counsel.

scribed devices as enables an opinion to be formed as to their use.

It having been conclusively shown on the trial that the use of the deflector plate to accomplish the very purpose suggested here was old and well known; the complainants in 1870 disclaimed the exclusive right to the use of *one* deflector and limited the claim to the use in combination of *two*. Upon examination of the original patent and the disclaimer, there is nothing to show that the *second* deflector is anything more than a mere duplication of the first, and this being so, no invention is disclosed.

The legal effect of the disclaimer was the same as if the patent had been surrendered and reissued, and the right of the patentee to a recovery is limited to what he would have been entitled to if the patent had been originally what it became by the amendment. But by describing and claiming as part of the *invention* what was *not* their invention, viz: the use of *one* deflecting plate, the patentees deprive themselves of all right to any compensation. The public was imposed upon and deceived by their misrepresentation, and for sixteen years they were deriving gains and profits from all persons using re-sawing machines upon the strength of this false representation. By the use in the first claim of the original specification of the words, "deflecting plates, one or two," there was introduced the same elements of uncertainty in description and excess of claim which led this court in the case of *Gill v. Wells*, 22 Wall. 1 [9 Am. & Eng. 471], to hold the reissued patent therein issued to be invalid. See also *Collar Co. v. Van Deusen*, 23 Wall. 530 [10 Am. & Eng. 156], and *Hailes v. Van Wormer*, 20 Wall. 354 [9 Am. & Eng. 340].

The machine used by the defendants did not infringe the patent, because defendants' machine had four adjustable feed rollers, and in front of them a pair of carved clamps, the object and only practical effect of which was to hold the upper edge of the board, while in contact with the saw, in proper position. They differed in form, method of adjust-

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ment, purpose and use from those described in the complainants' patent.

Mr. Renwick testifies that in respondents' machine neither the clamp on the line side or the other clamp have a lateral elasticity with respect to the roller plate; or a swinging motion, and one of them—that on the line side—has no lateral motion whatever when the machine is at work.

The machine of respondents has no knives or cutters for removing stub shot and does not contain the invention specified in the third claim of Meyers and Eunson's patent.

The difference between the complainants' and the defendants' machines in this respect is so marked as to deprive complainants of any right in regard to the latter. Corn Planter Patent, 23 Wall. 181 [10 Am. & Eng. 1]; Mason v. Graham, 23 Wall. 261, [10 Am. & Eng. 107].

(A large part of the argument was on the ground that the Court erred in sustaining the Master's report as to profits.)

Mr. Frederick H. Betts, for appellee:

Messrs. Meyers and Eunson were the first to introduce and make practical the roller feed with a circular saw, and their first claim (as modified by the disclaimer filed) is for those devices which render the use of their circular saw with the roller feed possible. It stands in the following words: "First, the employment or use of the deflecting plates, E, E, both placed at the sides of the saw as herein shown, for the purpose of preventing the sawed stuff from bearing against the sides of the saw, and for expanding the saw kerf, and also for the purpose of allowing a thin veneer saw to be stiffened by plates D, one or two as desired.

In this combination they were, however, unknown to them, anticipated by the Andrews and Sproat patent of 1839. The patentee accordingly disclaimed it. Their first clause of claim was separable into two distinct claims, one for the combination of one deflecting plate with the saw, and the other the combination of both deflecting plates with the saw; the second of said combinations being "The material

Argument of counsel.

and substantial part of the thing patented," and being "definitely distinguishable from the parts claimed without right." The patentees could, notwithstanding their error in claiming too much, maintain their suit for that "which is *bona fide* their own" (act of July 8, 1870, section 60), and could disclaim, as they have done, the part of which they have now discovered they were not the original and first inventors. *Tuck v. Bramhill*, 3 Fish. 400; *Aiken v. Dolan*, 4 Fish. 199; *Taylor v. Archer*, 8 Blatch. 315; *Seed v. Higgins*, 8 El. and Bl. 755.

The infringement of the complainants' patent by the defendants' machine can hardly now be seriously contested. The first, second and fourth claims (the only important ones,) are clearly appropriated by the defendants. The infringement was contested in the Court below with a variety of ingenious arguments, but it is manifest upon inspection, and is so conclusively settled by the reasoning of the court below that the first, second and fourth claims of the complainants' patent are infringed by the Dunbar machine. This infringement was persistently carried on for many years.

Meyers and Eunson accomplished the desired result by combining with the saw two deflecting plates, one on each side of the saw. The device is acknowledged to be effective for the purpose; more than this, it was productive of enormous practical advantages by rendering the use of the roller feed possible with the circular saw, a combination which increased five-fold the capacity of the machine to re-saw lumber. Mr. Treadwell, the complainants' expert, says on this subject, "in my opinion, it is not a mere duplication requiring no invention. The mode of operation of the combination of two deflectors with the saw, one being placed on each side of the saw, is substantially different from the mode of operation of a single deflector in the operation of sawing by the Andrews and Sproat machine."

Slight modifications of pre-existing machinery, although apparently simple, yet if productive of important results will always be upheld as patentable. *Forbush v. Cook*, 2

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Fish. 668; Brett v. Telegraph Co., 70 E. C. L. R. 882; Roberts v. Dickey, 1 O. G. 4.

In Parker v. Hulme, 1 Fish. 49, Judge Kane said, "Duplication of parts producing a new and useful result, as it was here produced, may be patentable. It is often the material part of a discovery because it may be that which renders useful what was previously useless. In the case of the proper machine before this court, it was held, that a number of rollers, acting in pairs for a particular purpose, might be patented, though a single pair could not have been."

Mr. Justice CLIFFORD delivered the opinion of the court:

Inventions, in order that the inventors may be entitled to patents for the same, must be new and useful; and the better opinion is, that the improvement must be of such a character that it involved invention to make it, as the Patent Act confers no right to obtain a patent except to a person who has invented or discovered some new and useful art, machine, manufacture or composition of matter, or some new and useful improvement in one or the other of those described subject-matters.

Sufficient appears, to show that a patent in due form was granted to John Meyers and Robert G. Eunson, on the 23d of May, 1854, for an alleged invention, described in the specification as relating to certain new and useful improvements in machines for sawing lumber into thin stuff for the backs of mirrors and picture frames, and other purposes for which thin stuff is used. Due application was subsequently made for an extension; and the record shows that the patent was regularly extended for the further term of seven years from the expiration of the first term.

Subsequent to the extension of the patent, one of the patentees, to wit: Robert G. Eunson, sold and assigned all his right, title and interest in the same, and the extension thereof, to Eugene S. Eunson, one of the complainants, who

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instituted the present suit in the court below. Pending the suit, the other complainant departed this life; and Margaret Meyers, his sole executrix, was duly admitted in his stead to prosecute the suit as co-complainant with the assignee of the other half interest in the extended patent. Infringement is charged, and that the respondents have made large gains and profits by the unlawful use of the patented invention; and the complainants pray for an account and for an injunction.

Process having been issued and service made, the respondents appeared and filed an answer, in which they set up in substance and effect the following defenses: (1) That the invention is of no utility or value. (2) That the patentees are not the original and first inventors of the alleged improvement. (3) That the alleged improvement was well known and had been in public use long prior to the supposed invention by the patentees. (4) That knowledge of such prior public use was possessed by the several persons whose names and places of residence are set forth in the answer. (5) That the patented improvement, years before the application for the patent was executed, was fully described in the respective printed publications mentioned in the answer filed by the respondents.

Minute and accurate description of the patented machine is given in the drawings, and the specification divides the invention into four separate features, as follows: (1) That it consists in the employment or use of deflecting plates—one or two—placed at the sides of a circular saw, for the purpose of enlarging or expanding the saw kerf to prevent the sawed stuff from coming in contact with the sides of the saw and binding the edge of the same near the teeth. Deflecting plates of the kind also allow the saw to be stiffened by a proper plate, so that a thin veneer saw may be employed, which will cause but a small waste of stuff in sawing. (2) That the invention consists in the employment or use of elastic clamps attached to the ordinary adjustable

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and elastic beds, between which the stuff is fed to the saw. Clamps of the kind have an elasticity independent of the beds, and compensate for the varying thickness of the different pieces of stuff to be sawed, by holding firmly the extreme end of the stuff, and keeping it in proper position to the saw, however much the elastic bed may be expanded by a succeeding piece of stuff of greater thickness. (3) That the invention also consists in the employment or use of knives or cutters secured to the adjustable beds, and so arranged as to cut or smooth off the rough and projecting sides of the stuff at the ends, making it of uniform thickness. (4) That it also consists in the combination of an adjustable bed and circular saw, arranged as shown in the specification.

Such a machine necessarily requires a frame, and the patentees state that the frame of the machine described in the specification may be constructed in any proper manner, and that the circular saw is placed on a shaft which runs transversely across the front of the frame.

They employ a circular saw, made of thin steel plate, such as is used for sawing veneers, on one side of which is a circular plate secured by rivets or screws, the plate being less in diameter than the saw, which has the effect to stiffen the plate of the saw, and to enable the operator to use a thinner saw than he would otherwise be able to do.

Two deflecting plates are also employed by the patentees, one on each side of the saw; the one on the same side of the saw with the stiffening plate covers the upper part of that plate, the outer end of which projects further from the saw than the inner end, the deflecting plate on the other side of the saw being of the same description, except that it is rather smaller in diameter, and that it projects from the saw at about an equal distance at both ends. They are arranged one on each side of the saw, and are attached to the frame by means of bolts, rivets, or screws.

Two feed-roller beds are placed vertically in the back part

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of the frame parallel with each other, both of which are made adjustable by screw rods which bear against the sides of the beds, the screw rods of each bed being operated simultaneously by means of chains passing round small toothed wheels at the ends of the screw-rods.

Two cranks are also employed, one of which is attached to one of the toothed wheels of each bed. Lateral elasticity is given to the beds by means of India-rubber or other springs attached to them in a proper manner.

Four feed rollers are employed, two of which are placed in each bed, and the specification states that the feed-rollers project some distance beyond the inner edges of the beds. Clamps, two in number, are attached to the inner ends of the beds, and at the back part of each clamp there are two journals, one at the top and one at the bottom, fitted in boxes which work or slide in recesses in the top and bottom pieces of the beds.

Set screws are also provided, which pass transversely through the top and bottom pieces of each bed, the inner ends of which bear against India-rubber springs placed directly back of the boxes.

There are two of these rubber springs at the top of the clamps, one to each clamp, and it appears that they are placed between the clamps and the set screws, passing transversely through the top pieces of the beds. Hence it follows that the clamps may be made to vibrate laterally; but it also appears that two stops are provided, which pass through the top pieces of the beds, one through each top piece, for the purpose of limiting and regulating the extent of such lateral vibration.

Knives or cutters are also provided, which are placed vertically, one in each bed; but it is unnecessary to enter into those details, as it is not pretended that the respondents have infringed the third claim of the patent.

Motion is given to the feed-rollers by gearing, which is shown in the drawings at the lower part of the rollers.

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Means are also provided for adjusting the beds relatively to the saw, so that the boards or other lumber may be sawed into the desired thickness. Either side of the saw may be made the line side in the operation of sawing by the adjustment of the proper roller-bed, so as to prevent expansion or contraction.

Stuff to be sawed, whatever it may be, is placed between the feed-rollers in the beds and, motion being communicated to the saw and rollers, the stuff is fed forward towards the saw and is cut by it, the two pieces being prevented from bearing against the sides of the saw by means of the deflecting plates. When the outer end of the material to be sawed has passed the inner feed-roller, the clamps bear against the board and hold it in a proper relative position to the saw, so that if another board to be sawed is placed between the feed-rollers it will advance and press forward the board first placed between the rollers, and if the last board is thicker than the preceding one the only effect is that it acts upon the beds and forces the elastic one farther from the permanent one without affecting the clamps, which, owing to the springs, have an independent elasticity.

Tested by the example given in the specification, as illustrating the mode of operation, it is plain that either side of the saw may be made the line side in the practical working of the machine. In the example put by the patentees, they assume that the roller-bed, in line with the deflecting plate, which is on the same side of the saw as the stiffening plate, is permanently fixed at one-quarter of an inch from the side of the saw, and that the opposite bed being elastic, the side of the saw on which the thin strip passes is the line side during the operation of sawing; but the patentees state that the opposite side of the saw may be made the line side by permanently fixing the opposite roller-bed and by allowing the other one to remain elastic, and that by these improvements they are enabled to use a thin veneer saw, and

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to keep the stuff to be sawed in a proper relation to the saw, even when varying in thickness.

Three of the claims of the patent, it is charged, are infringed by the respondents, to wit: the first, second and third. They are as follows: (1) The employment or use of the deflecting plates, one or both, placed at the sides of the saw, as shown, for the purpose of preventing the sawed stuff from bearing against the sides of the saw and expanding the saw kerf, and also for the purpose of allowing a thin veneer saw to be stiffened by plates, one or two, as desired. (2) They claim the employment or use of the clamps, arranged as shown, or in any equivalent way so that they may have a lateral elastic movement, independent of the roller-beds to which the clamps are attached, for the purpose of compensating for the varying thickness of different pieces of stuff, and to keep the same in a proper relative position to the saw. (3) They also claim "The employment of an adjustable bed with clamps, as described, in combination with the saw when the saw has a stiffening plate in line with the adjustable bed, by which the stiffened or rounded side of the saw is made the line side of the same for practical operation."

Prior to the hearing, the complainants filed a petition in the Patent Office, in which they state that the patentees, through inadvertence, accident and mistake, and without any fraudulent or deceptive intention, claimed more in their specification than that of which they were the original inventors. Pursuant to that petition, they were permitted to enter a disclaimer in two respects: (1) To amend the first claim by striking out the words "one or" before the word both, so that the claim includes *only* the employment and use of the saw with both of the deflecting plates, when both of the plates are used at one and the same time, in the manner and for the purposes described. (2) They also made a corresponding amendment in the specification, limiting the description of the invention to the em-

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ployment of the two deflecting plates placed at the sides of the circular saw, disclaiming the use of one plate *only*, for the purposes set forth in the specification.

Proofs were taken ; and, both parties having been heard, the court entered a decretal order in favor of the complainants, and referred the cause to a master. Due report was made by the master, to which both parties excepted ; but the court overruled the exceptions and, having confirmed the report, entered a final decree in favor of the complainants for the sum of \$9,120.94, being the gains and profits made by the respondents, as ascertained by the master. Both parties appealed to this court.

Eight errors are assigned by the respondents, two of which only will be examined : (1) That the court erred in holding that there was invention in using two deflecting plates when the use of one was well known. (2) That the court erred in holding that the respondents infringed the letters patent granted to the complainants.

Viewed in the light of the disclaimer, it is clear that the first claim of the patent is for the employment or use of two deflecting plates, one being placed on each side of the saw, for the purpose of preventing the sawed stuff from bearing against the sides of the saw and to allow a thin veneer saw to be stiffened by the plate employed or used for that purpose ; and it is equally clear that the employment or use of one deflecting plate for the purpose was well known and in public use long before the original patentees in this case applied for a patent.

Conclusive evidence to support that proposition is found in the disclaimer filed by the complainants pending the suit, in addition to the other evidence in the case, which is abundantly sufficient to establish the proposition, even without the disclaimer. Authority to make such a disclaimer is beyond question, if it be made in writing and is duly attested and recorded in the Patent Office. When so made, attested and recorded, it becomes a part of the origi-

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nal specification to the extent of the interest of those who make it; but the provision is that it shall not affect any action pending at the time of its being filed, except so far as may relate to the question of unreasonable neglect or delay in filing it. 16 Stat. at L., 206, R. S. sec. 4917.

Pending suits may proceed, but the disclaimer, when recorded, becomes a part of the original specification, and must be taken into account in construing the patent, and in ascertaining the rights of the parties to the suit, unless it appears that the effect of the disclaimer is to enlarge the nature of the invention, and prejudice the rights of the respondents. *Perry v. Skinner*, 1 Web. Pat. Cas. 253 [2 Am. & Eng. 454]; *Ralston v. Smith*, 9 C. B. (N. S.) 145; S. C., 11 C. B. (N. S.) 471; *Smith v. Nichols*, 21 Wall. 117 [9 Am. & Eng. 425].

Where the effect of the disclaimer is to diminish the claims of the patent without prejudicing the rights of the respondent, the suit may proceed, notwithstanding the disclaimer; it being held that the disclaimer, under such circumstances, does not affect the pending suit, except to limit and qualify the claims of the patent, and in respect to the question of unreasonable neglect or delay in filing the same. Unreasonable delay not having been suggested, the only effect of the disclaimer in such a case is to limit the nature of the invention secured by the patent, and to diminish the claims of the patent as set forth in the specification. *Guyon v. Serrell*, 1 Blatchf. 245; *Hall v. Wiles*, 2 Blatchf. 198.

Matters properly disclaimed cease to be a part of the invention; and it follows that the construction of the patent must be the same as it would be if such matters had never been included in the description of the invention or the claims of the specification, 16 Stat. at L. 206; *Seed v. Higgins*, 8 El. & Bl. 767; *Higgins v. Seed*, 8 El. & Bl. 763; *O'Reilly v. Morse*, 15 How. 121 [5 Am. & Eng. 483]; *Taylor v. Archer*, 8 Blatchf. 317.

Tested by these considerations, it is clear that the first

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claim of the patent is for the employment or use of two deflecting plates, one placed on each side of the saw, for the purposes therein set forth and described. Circular plates attached to circular saws, secured by rivets or screws for the purpose of strengthening the central portion of the saw-plate, and sometimes called stiffening plates, are old devices which have been known to the operators of the circular saw ever since the circular saw came into general use for sawing shingles, laths and clapboards. Nor is any argument necessary to show that the employment of one deflecting plate covering the upper part of the stiffening plate on the same side of the circular saw is old, as that is proved by the evidence, conceded in argument, and alleged in the disclaimer filed by the complainants.

Concede that ; and still it is insisted by the complainants that they employ or use two deflecting plates, one placed on each side of the saw, and that the employment or use of the additional deflecting plate on the opposite side of the saw is a new and useful improvement in the operation of the machine, for which the patentees, whom they represent, were justly entitled to the patent set forth in the bill of complaint.

Operators of machines for sawing lumber, whether with circular or vertical saws, have long known that some means were useful, if not absolutely necessary, to spread the two parts of the lumber behind the saw, so as to prevent the lumber as sawed from binding against the two faces of the saw to such an extent as to endanger the saw and impede the progress of the work without an increase of the motive power. Wedges, in early times, were used by the operator to accomplish the object, and various other devices were employed before the deflecting plate came into use, which, it seems, has had the effect to supersede all other devices previously known to effect the described function. Such machines for sawing lumber, constructed with one deflecting plate, were well known and in general use years before

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the patentees in this case made their application for a patent; and the evidence satisfies the court that for most purposes the machine will operate as well and as successfully with one deflecting plate as with two. Two deflecting plates may be better than one, where it is desired to split thin stuff into two parts of equal thickness, as in that case the saw kerf may be enlarged by deflecting the stuff on each side of the saw.

Grant that two such plates are in certain cases better than one used alone, still the question arises whether it involves any invention to add the second plate to a machine already constructed with one plate. Beyond doubt, every operator who had used a machine having one deflecting plate knew full well what the function was that the deflecting plate was designed to accomplish, and the reasons for placing it at the side of the saw are obvious to the understanding of every one who ever witnessed the operation of a circular saw. Ordinary mechanics know how to use bolts, rivets and screws, and it is obvious that any one knowing how to use such devices would know how to arrange a deflecting plate at one side of a circular saw which had such a device properly arranged on the other side, it being conceded that both deflecting plates are constructed and arranged precisely alike, except that one is placed on one side of the saw and the other on the opposite side. Both are attached to the frame in the same manner; nor is it shown, either in the specification or drawings, that there is anything peculiar in the means employed for arranging the deflecting plates at the sides of the saw, or in attaching the same to the frame. Both are alike, except that the outer end of the one on the same side as the strengthening plate projects farther from the saw than the inner end, and that the other is rather smaller in diameter, and that the ends project about an equal distance from the saw.

Expert witnesses were examined upon the point, whether it required invention to attach a second deflecting plate

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to such a machine; and one of the most intelligent and learned of his class testified to the effect that the deflecting plate on one side of the complainant's machine performs precisely the same duty as the plate upon the other side of the saw, and that it required no invention to apply a second plate in such a case to perform exactly the same duty as the one previously applied on the opposite side of the saw; that such second application is a mere duplication of the first; and he supports his conclusion by apt examples, which are both persuasive and convincing.

Persons seeking redress for the unlawful use of letters patent must allege and prove that they, or those under whom they claim, are the original and first inventors of the alleged improvement, and that the letters patent have been infringed by the party against whom the suit is brought. *Prima facie* support to the first requirement is derived from the patent, if it is introduced in evidence and is in due form, provided the alleged improvement is one which in its nature is patentable. Evidence to overcome that presumption, however, is always admissible, if due notice is given by the opposite party, as required by law; and the question is now well settled, that the question whether the alleged improvement is or is not patentable, is, in an equity suit, a question for the court.

Applicants for a patent are required to file in the Patent Office a written description of their invention, and of the manner and process of making, constructing and using the same, in such full, clear, concise and exact terms as to enable any person skilled in the art or science to make, construct and use the patented improvement. Rights of the kind are given *only* to inventors or discoverers of some new and useful art, machine, manufacture or composition of matter, or some new and useful improvement thereof; and the law is well settled that nothing short of invention or discovery will support a patent for any such alleged new and useful improvement.

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Certain other important conditions are also annexed to the exercise of the right to obtain such a muniment of title for such an invention or discovery; as, for example, the improvement must not only be new and useful, but it must be one not known or used by others in this country, and not patented or described before the invention or discovery in any printed publication in this or any foreign country, and must not have been in public use or on sale for more than two years prior to the application for the patent. 16 Stat. at L. 201; *Collar Co. v. Van Deusen*, 23 Wall. 563 [10 Am. & Eng. 156].

Invention or discovery is the requirement which constitutes the foundation of the right to obtain a patent; and it was decided by this court, more than a quarter of a century ago, that unless more ingenuity and skill were required in making or applying the said improvement than are possessed by an ordinary mechanic acquainted with the business, there is an absence of that degree of skill and ingenuity which constitute the essential elements of every invention. *Hotchkiss v. Greenwood*, 11 How. 267 [5 Am. & Eng 240].

Ten years later, a case came before this court, in which the plaintiff claimed certain improvements in the construction of a machine for sawing lumber with the circular saw, including the manner of affixing and guiding the saw by allowing end play to its shaft, in combination with the means of guiding the device by friction rollers and other appliances. Mills for sawing logs with a circular saw had been well known long before the supposed invention; and, in construing the claim of the patent, this court said that the claim is for the precise organization of the old machine, namely: the manner of affixing and guiding the circular saw by allowing end play to its shaft, in combination with the means of guiding it by friction rollers, so as to leave the center entirely unchecked; adding, that there is nothing new in the combination, and assigning as the reason for the conclusion, that the improvement had long been known and used in

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the circular saw for sawing timber of smaller dimensions than ordinary saw-logs.

Enough appears to show that the machine in that case was larger than those of the kind which had preceded it; but the court remarked that that circumstance did not afford any ground in the sense of the patent law for a patent, for the reason that the ordinary mechanic was doing the same thing every day in making a working machine from the patent model.

In order to reach invention, say the court in that case, the patentee must carry his improvement further; he must contrive the means of adapting the enlarged old organization to the new use, namely: the sawing of saw-logs; and claim, not the old parts, but the new devices by which he has produced the new results. *Phillips v. Page*, 24 How. 167 [7 Am. & Eng. 97].

Decisions by this court of later date have been made to the same effect; as, for example, the court decided that the claim of the patentee for making the cases of door locks and latches double faced, or so finished that either side of the case may be used for the outside, in order that the same lock or cased fastening may answer for a right or left hand door, was void, because the patentee did not show that he was the original and first inventor of the improvement, and intimated very strongly that the making of such a case, with two faces just alike, and so finished off in point of style that either side was fit to be presented outwards, was not a matter which could be patented, even if no locks with such cases had ever before been made. *Jones v. Morehead*, 1 Wall. 162 [7 Am. & Eng. 165].

Patented improvements which are not new and useful, or which did not require any invention or discovery to make the same, as compared with what existed or was in use before, may be declared invalid by the court in an equity suit. *Stimpson v. Woodman*, 10 Wall. 121 [8 Am. & Eng. 221.]

Mere change in a machine, of one material for another,

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as wood or wood strengthened with iron for iron alone, is not invention in the sense of the Patent Act and, therefore, is not the subject of a patent. *Hicks v. Kelsey*, 18 Wall. 670 [9 Am. & Eng. 150].

Old processes are sometimes applied to new subjects, and where that was so, in a case which did not require the exercise of the inventive faculty, and without the development of any idea which could be deemed new or original in the sense of the patent law, it was held that the supposed improvement was not the subject of a patent, and that courts of justice may take judicial notice of a thing in the common knowledge and use of the people throughout the country. *Brown v. Piper*, 91 U. S. 38 [10 Am. & Eng. 272].

Proof of the state of the art is admissible in equity cases, without any averment in the answer touching the subject and in actions at law, without giving the notice required when evidence is offered to invalidate the patent. It consists of proof of what was old and in general use at the time of the alleged invention; and may be admitted to show what was then old, or to distinguish what is new, or to aid the court in the construction of the patent.

Meritorious inventors are entitled to protection; but it is settled law that a mere carrying forward of an original patented conception, involving only change of form, proportions or degree, or the substitution of equivalents, doing the same thing as the original invention by substantially the same means, is not such an invention as will sustain a patent, even though the changes of the kind may produce better results. *Smith v. Nichols*, 21 Wall. 115 [9 Am. & Eng. 425].

Effective support to the proposition, that nothing but invention or discovery will entitle an applicant to a patent, is also found in the reported decisions of the Circuit Courts, as appears from the following citations. Judge Story held, many years ago, that the mere application of an old process, machine or device to a new use was not patentable;

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that there must be some new process or some new machinery to produce the result, in order that the supposed inventor may properly have a patent for the alleged improvement. *Howe v. Abbott*, 2 Story, 194; *Bean v. Smallwood*, 2 Story, 411; *Glue Co. v. Upton*, 6 Off. Gaz. 842; *Needham v. Washburn*, 7 Off. Gaz. 648.

Conclusive support to the proposition that an applicant for a patent is not entitled to the public protection, unless the supposed improvement involves actual invention or discovery, is found in the oft repeated decisions of all the English courts having jurisdiction in such cases; and it is safe to remark, that the courts of that country apply the rule more readily, and with a much closer scrutiny, than do the courts of this country exercising the like jurisdiction. *Ralston v. Smith*, 11 Cl. & Fin. 223; *Harwood v. R. Co.*, 11 H. L. Cas. 654; *Jordan v. Moore*, L. R., 1 C. P. 635; *Kay v. Marshall*, 8 Cl. & F. 245; *Bush v. Fox*, 5 Cl. & Fin. 707; *Tetley v. Easton*, 2 C. B. (N. S.) 706; *Horton v. Mabon*, 12 C. B. (N. S.) 450; *Ormson v. Clarke*, 14 C. B. (N. S.) 475; *Parkes v. Stevens*, L. R. 8 Eq. 358; S. C., L. R. 5 Ch. App. 36; *Envelope Co. v. Seymer*, 5 C. B. (N. S.) 173; *White v. Toms*, 17 L. T. (N. S.) 348; *Ralston v. Smith*, 11 C. B. (N. S.) 474; *Ormson v. Clarke*, 13 C. B. (N. S.) 339; *Ralston v. Smith*, 9 C. B. (N. S.) 144; *Sanders v. Aston*, 3 B. & Ad. 885 [1 Am. & Eng. 466]; *Seed v. Higgins*, 8 El. & Bl. 755.

For these reasons, we are all of the opinion that the claim of the improvement described as the employment or use of two deflecting plates, one placed on each side of the circular saw, for the purposes set forth in the specification, is void, because it does not constitute a patentable invention.

Suppose that is so; still it is insisted by the complainants that the decree of the Circuit Court should be affirmed in respect to the second and fourth claims of the patent.

Clamps are employed or used by the complainants, arranged as shown, so as to have a lateral elastic movement, independent of the roller beds to which the clamps are attached, for the purposes set forth in the second claim.

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Admit that the claim is a valid one ; still it is insisted by the respondents that they do not infringe that part of the patented invention and, consequently, that the decree of the Circuit Court should be reversed.

Four adjustable feed-rollers are shown in the machine of the respondents, and in front of them there is a pair of clamps, of peculiar construction, the object and only practical effect of which, it seems, is to hold the upper edge of the stuff to be sawed in proper position while it is in contact with the saw. Evidently they differ in form, method of attachment, purpose, and use from those described in the specification of the complainants. Instead of that, the clamps described in the complainants' patent are attached to the inner ends of the roller-beds, so that there are two journals at the back part of each clamp, which fit in boxes, and work or slide in recesses in the top and bottom pieces of the roller-beds.

To that it may be added, that the action of the clamps in the complainants' machine is governed by the set screws which bear against rubber springs back of the boxes, the distance of the lateral vibration of the clamps being regulated by the stops, which are arranged to pass through the top pieces, the object of the arrangement being to give the clamps the ability to have a lateral elasticity and vibratory movement independent of the roller-beds, for the purpose, as stated in the claim, of compensating for the varying thickness of the different pieces of stuff, and to keep the stuff to be sawed in a proper relative position to the saw.

Competent experts testify that the clamps in the machine used by the respondents have no lateral elastic or vibratory motion independent of the roller-beds, and that they cannot perform the functions of the clamps described and claimed in the patent set forth in the bill of complaint ; and the court is of the opinion, from an examination of the models exhibited, that the testimony of the expert is correct.

Keeping in view what has already been remarked, a few

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additional observations will be sufficient to dispose of the questions arising under the fourth claim of the specification, in which the complainants claim the employment of an adjustable bed, with clamps as described, in combination with the saw, when the saw has a stiffening plate in line with the adjustable bed, by which the stiffened or rounded side of the saw is made the line side.

Taken as it reads, the fourth claim does not include a deflecting plate, and only a stiffening plate on one side of the saw; and, if not, it is difficult to see how the devices claimed in the combination will permit the stiffened or rounded side of the saw to be made the line side, unless the deflecting plate is added to the claimed combination. Add the deflecting plate to the combination, and it is quite clear that the claim may include parts sufficient to be operative; but when such stiffened side is thus made the line side, and the clamps embrace the saw as described, it is quite essential that the clamp on the line side should have a lateral elasticity with respect to the bed, and also the described swinging motion. Neither the clamp on the line side or the one on the opposite side in the respondent's machine have any lateral elasticity with respect to the roller-bed, or a swinging motion, and the one on the line side of the saw has no lateral motion whatever when the machine is in operation.

Differences of opinion may possibly exist upon that topic, but all must agree that the claimed combination includes the clamps, and that infringement is not proved, unless it appears that the respondents use the entire combination. Having already decided that the respondents do not use the clamps of the complainants, it is unnecessary to pursue the inquiry, except to say that it is settled law, that, where the respondent in constructing his machine omits one of the ingredients of the complainant's combination, he does not infringe the complainant's patent. *Gould v. Rees*, 15 Wall. 194 [9 Am. & Eng. 39]; *Prouty v. Ruggles*, 16 Pet. 341 [4 Am. & Eng. 351]; *Vance v. Campbell*, 1 Black. 427 [7

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Am. & Eng. 117]; Gill v. Wells, 22 Wall. 28 [9 Am. & Eng. 471].

Suffice it to remark that, in view of these conclusions, it becomes unnecessary to examine the errors assigned in respect to the rule of damages.

Decree reversed and the cause remanded, with directions to enter a decree dismissing the bill of complaint.

94 U. S. 202.

Notes:**2. Disclaimer—its purpose :**

Silsby v. Foote, 14 How. 218 [5 Am. & Eng. 411].
O'Reilly v. Morse, 15 How. 62 [5 Am. & Eng. 483].
McMurray v. Mallory, 111 U. S. 79.
Cartridge Co. v. Cartridge Co., 112 U. S. 624.

Effect in construction of patent :

Ashcroft v. Railroad, 97 U. S. 189.
Packing Co. Cases, 105 U. S. 566.
Hailes v. Albany Stove Co., 123 U. S. 582.

4. Duplication does not involve invention :

Jones v. Morehead, 1 Wall. 155 [7 Am. & Eng. 165].
Slawson v. Railroad Co., 107 U. S. 649.

8. Combination not infringed by use of part only :

Prouty v. Ruggles, 16 Pet. 336 [4 Am. & Eng. 351].
Stimpson v. Railroad Co., 10 How. 329 [5 Am. & Eng. 129].
Silsby v. Foote, 20 How. 378 [6 Am. & Eng. 392].
McCormick v. Talcott, 20 How. 402 [6 Am. & Eng. 410].

Notes and Citations.

Eames v. Godfrey, 1 Wall. 78 [7 Am. & Eng. 158].
Case v. Brown, 2 Wall. 230 [7 Am. & Eng. 360].
Gould v. Rees, 15 Wall. 187 [9 Am. & Eng. 39].
Garratt v. Seibert, Bk. 21 L. ed. 956 [9 Am. & Eng. 161].
Schumacher v. Cornell, 96 U. S. 549 [p. 443 *post*].
Water-Meter Co. v. Desper, 101 U. S. 332.
Wicke v. Ostrum, 103 U. S. 461.
Gage v. Herring, 107 U. S. 640.
Rowell v. Lindsay, 113 U. S. 97.
Blake v. City of San Francisco, 113 U. S. 679.

Patent in suit:

No. 10, 965. Meyers & Eunson. May 23, 1854. Sawing
Machine.

OTHER SUITS ON SAME PATENT:

Meyers v. Dunbar, 1871. 8 Blatch. 446; 4 Fish. 493.
Peck v. Frame, 1871. 9 Blatch. 194; 5 Fish. 113.
Eunson v. Dodge, 1873. 18 Wall. 414 [9 Am. & Eng. 139].
Emerson v. Simm, 1873. 6 Fish. 281; 3 O. G. 293.
Meyers v. Duker, 1874. 1 Ban. & Ard. 535.
Meyers v. Dunbar, 1874. 12 Blatch. 380; 1 Ban. & Ard. 565; 8 O.
G. 321.
Tyson v. Myers, 1878 [12 Am. & Eng. 101].

Cited:**IN SUPREME COURT IN:**

Roemer v. Simon, 1877. 95 U. S. 214; Bk. 24 L. ed. 384 [p. 348 *post*].

Notes and Citations.

Slawson v. Grand St., Prospect Park & Flatbush R. Co., 1883. 107 U. S. 649; Bk. 27 L. ed. 576.
Mahn v. Harwood, 1884. 112 U. S. 354; Bk. 28 L. ed. 665.
Morris v. McMillin, 1884. 112 U. S. 244; Bk. 28 L. ed. 702.
Electric Railroad Signal Co. v. Hall Railway Signal Co., 1885. 114 U. S. 87; Bk. 29 L. ed. 96.
Rowell v. Lindsay, 1885. 113 U. S. 97; Bk. 28 L. ed. 906.
Hendy v. The Golden State & Miner's Iron Works, 1888. 127 U. S. 370.

IN CIRCUIT COURTS IN :

Alcott v. Young, March, 1879. 16 Blatch. 134; 4 Ban. & Ard. 197; 7 Reporter, 552; 16 O. G. 403.
Ex parte Strong, February, 1880. 17 O. G. 446.
Root v. Welch Mnfg. Co., February, 1880. 17 Blatch. 478; 4 Fed. Rep. 423; 5 Ban. & Ard. 189; 17 O. G. 849.
Sawyer v. Miller, May, 1882. 4 Woods, 472; 12 Fed. Rep. 725.
Pacific, etc., Wall Co. v. United States, March, 1884. 19 Ct. of Cl. 234.
Atlantic Giant Powder Co. v. Hulings, July, 1884. 21 Fed. Rep. 519.
Leonard v. Lovell, December, 1886. 29 Fed. Rep. 310.
West v. Rae, November, 1887. 33 Fed. Rep. 45.
Ligowski Clay-Pigeon Co. v. American Clay-Bird Co., March, 1888. 34 Fed. Rep. 328.

IN DECISIONS OF COMMISSIONER OF PATENTS IN:

Chambers & Mendham v. Tucker, March, 1877. 11 O. G. 1009.
Strong v. Cruikshank, July, 1877. 12 O. G. 138.
Blackman v. Morray, October, 1877. 13 O. G. 175.
Campbell, June, 1878. 14 O. G. 83.
Carter, September, 1878. 14 O. G. 201.

Notes and Citations.

Ex parte Holcomb, March, 1879. 16 O. G. 48.

Ex parte Sullivan, May, 1879. 16 O. G. 559.

Lovejoy v. Hill, January, 1880. 17 O. G. 331.

Ex parte Fisher, February, 1880. 17 O. G. 570.

IN TEXT-BOOKS IN :

Merwin on Pat. Inv't., 1883. pp. 20, 205.

Walker on Pats., 1883. pp. 25, 144, 252, 264, 335.

Oct., 1876.]

DUNBAR v. MEYERS.

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Syllabus.

WILLIAM H. CAMMEYER ET AL., APPELLANTS, v.
JOHN NEWTON ET AL.*

94 (4 Otto) U. S. 225-237. Oct. Term, 1876.

[Bk 24, L. ed. 72; 11 O. G. 287.]

Affirming *Ibid*, 12 Blatch. 122.

Submitted November 24, 1876. Decided January 29, 1877.

Assignment prior to patenting. Evidence. Patent. First inventor. Particular patent construed. Infringement. Government use of patented article.

1. Inventions may be assigned before they are patented. (p. 121.)
2. The patent, if introduced in evidence by the complainant, affords a *prima facie* presumption that the supposed inventor is the original and first inventor of the improvement. (p. 126.)
3. The claims of reissued letters patent No. 6,249, S. Lewis, January 26, 1875, Still Water Dam, original patent No. 80,492, July 28, 1868, *construed* and *held* not infringed by a substantially different machine. (p. 126.)
4. Public employment is no defense to the employé for having converted the private property of another to the public use without his consent, and without just compensation. (p. 130.)
5. Private property, the Constitution provides, shall not be taken for public use without just compensation, and it is clear that the provision is as applicable to the Government as to individuals, except in cases of extreme necessity in time of war, and of imminent and impending public danger. (p. 130.)
6. A patent is private property, and the Government cannot, after it is issued, make use of the improvement any more than a private individual without license of the inventor, or making him compensation. (p. 131.)

[Citations in the opinion of the court:]

Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290]. p. 126.

Mitchell v. Harmony, 13 How. 115. p. 130.

U. S. v. Russell, 13 Wall. 623. p. 130.

U. S. v. Burns, 12 Wall. 246 [8 Am. & Eng. 458]. p. 131.

See Explanation of Notes, page III.

Statement of the case.

Appeal from the Circuit Court of the United States for the Southern District of New York.

The bill in this case was filed in the court below by the appellants, to recover for an alleged infringement of a certain patent, and for an injunction. A decree having been entered in favor of the respondents, the complainants appealed to this court.

The specifications and drawings of Lewis' reissued letters patent are as follows :

**SAMUEL LEWIS, OF WILLIAMSBURG, NEW YORK,
ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-
HALF INTEREST TO WILLIAM H. CAMMEYER.**

IMPROVEMENT IN APPARATUS FOR REMOVING OBSTRUCTIONS UNDER WATER.

Specification forming part of Letters Patent No. 80,492, dated July 28, 1868 ; Reissue No. 6,249, dated January 26, 1875 ; application filed July 20, 1874.

To all whom it may concern :

Be it known that I, Samuel Lewis, of Williamsburg, in the county of Kings and State of New York, have invented certain Improvements in Apparatus for Removing Obstructions under Water, of which the following is a specification :

This invention is chiefly designed to be used for the removal of obstructions under water in tideways or currents, though the whole, or at least some portions thereof, may be used with advantage in the removal of rock in still water.

The class of obstructions under water to the removal of which it is more particularly adapted is submerged rock, though there may be other obstructions in the removal of which its use may be found beneficial.

One part of this invention relates to the construction of a dam, inclosure, or breakwater, adapted to shield the place

Statement of the case.

of operations, which dam, inclosure, or breakwater shall be portable—that is to say, capable of being removed from place to place, and also capable of being adjusted to the depth of water in which it may be used, or to adapt it to be more conveniently removed from one place to another, as occasion may require, or to adapt it to the rise and fall of the tide when used in a tideway—and which dam, inclosure, or breakwater shall also be adapted to check the flow of the current, and thus protect the operators and operations, to some extent, at least, from the effects of such current.

This portion of the invention consists in the construction of the said dam, inclosure, or breakwater in sections, entering one within another vertically, and having a capacity for movement within each other vertically, by a movement similar to that of pushing in or drawing out the joints of a telescope, so that the height of the dam, inclosure, or breakwater may be increased or diminished by diminishing or increasing the entrance of one section within another in the manner above suggested.

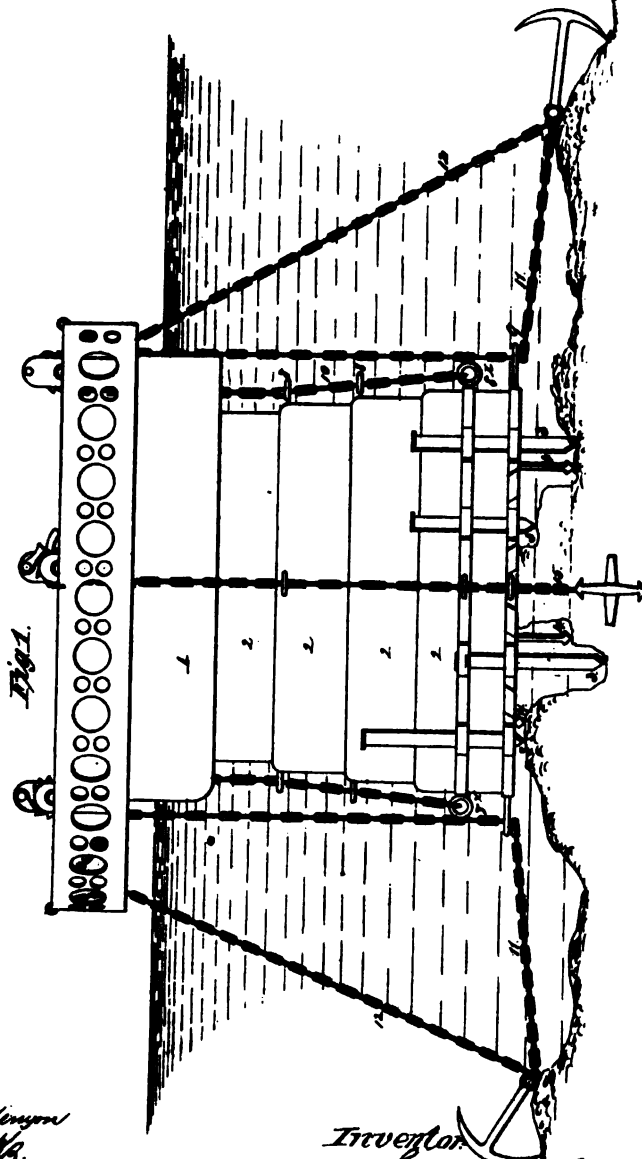
Another part of said invention relates to a device designed to add to the security in position of a portable dam, inclosure, or breakwater, when in position for operations; and consists in the combination, with a portable dam, inclosure, or breakwater, of self-adjusting or adjustable anchors, adapted to fit vertically into inequalities or crevices in the rock or bottom of the channel or tideway, and hold, or aid in holding, said dam, inclosure, or breakwater in position, substantially as hereinafter more fully set forth.

Another part of said invention relates to the arrangement of an open floating deck, in relation to a portable submarine dam, inclosure, or breakwater; and consists in arranging such open deck, with the opening therein, over the space inclosed or protected by the said submarine dam, inclosure, or breakwater, which arrangement enables operations necessary to be carried on within the said dam, inclosure, or breakwater, to be carried on through the opening in the said deck, substantially as hereinafter more fully set forth.

S. LEWIS.

Apparatus for Removing Obstructions Under Water.
No. 6,249.

Reissued Jan. 26, 1875.



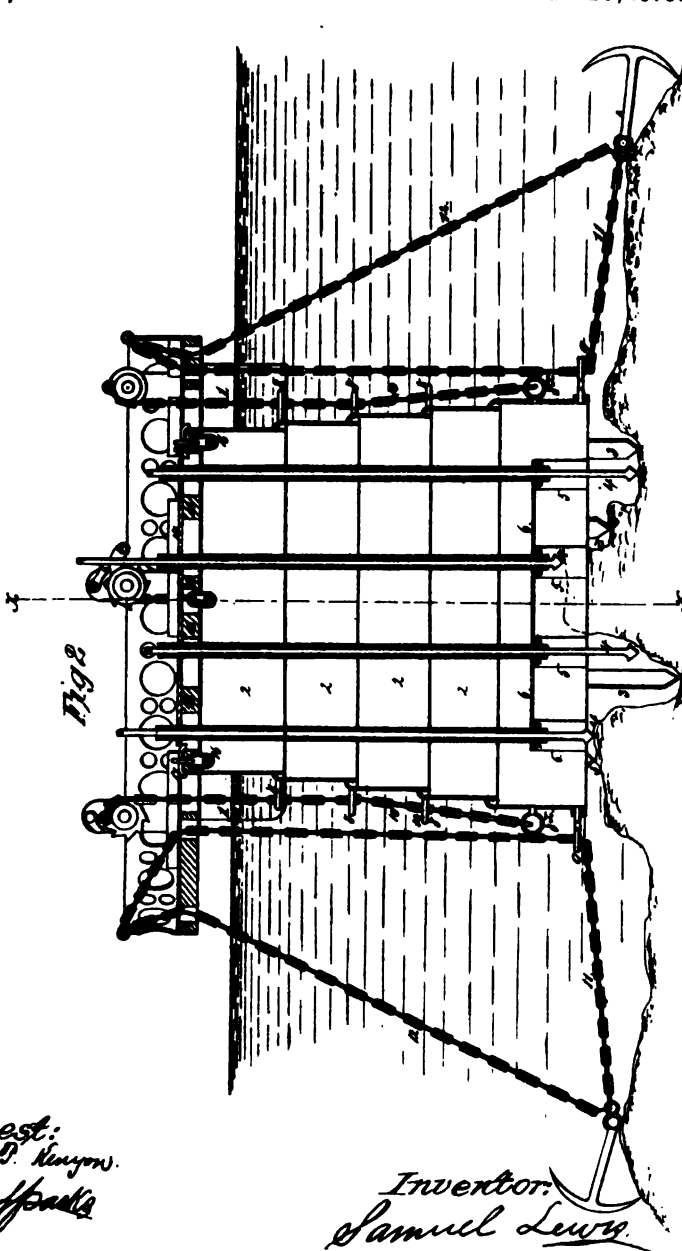
Attest:
James P. Henson
Clerk.

Inventor.
Samuel Lewis.

S. LEWIS.

Apparatus for Removing Obstructions Under Water.
No. 6,249.

Reissued Jan. 26, 1875.



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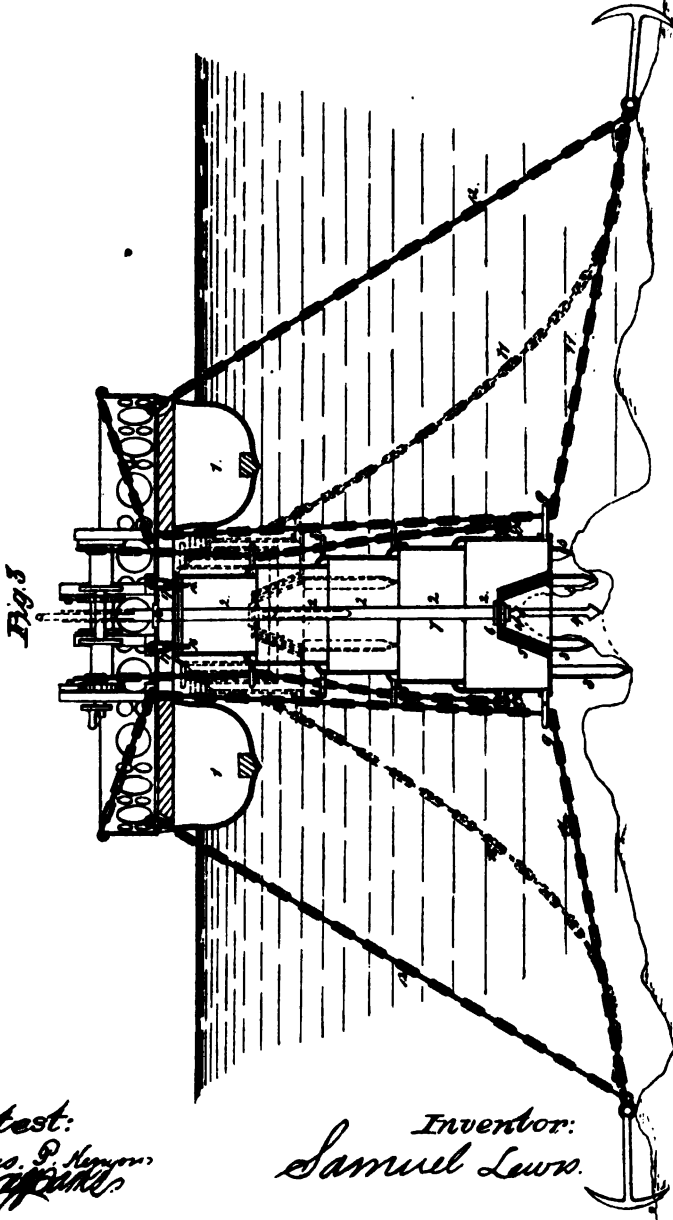
Inventor.
Samuel Lewis.

S. LEWIS.

Apparatus for Removing Obstructions Under Water.
No. 6,249. Reissued Jan. 26, 1875.

No. 6,249.

Reissued Jan. 26, 1875.



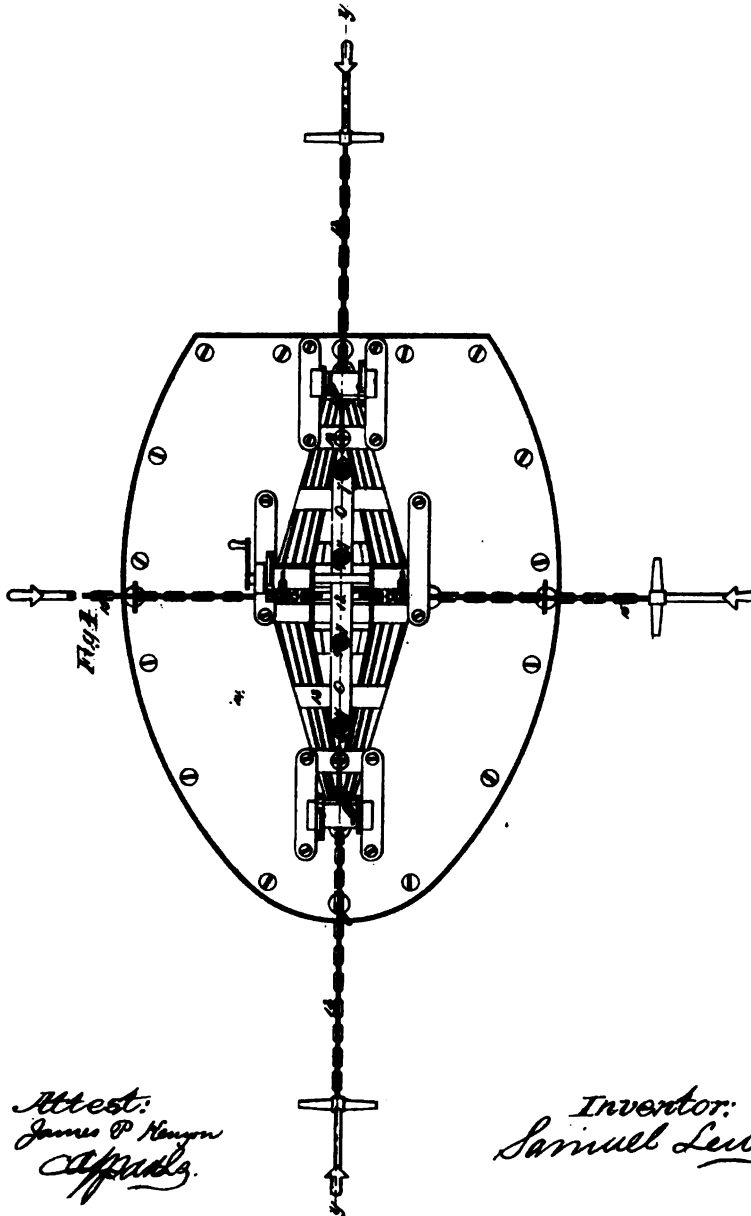
Attest:
James P. Henson,
Clerk.

Inventor:
Samuel Lewis.

S. LEWIS.

Apparatus for Removing Obstructions Under Water.
No. 6,249.

Reissued Jan. 26, 1875.



Statement of the case.

Another part of said invention consists in the combination, with a portable dam, inclosure, or breakwater, of a drill-support or drill-frame attached thereto, whereby the one is made capable of supporting the other, substantially as hereinafter more fully set forth.

Another part of said invention consists in the arrangement, in the lower portion or section of a submarine dam, inclosure, or breakwater, of a drill-support or drill-frame attached thereto.

Another part of said invention consists in the combination, with a floating deck or floor supported above the water, of a submerged drill-frame, arranged directly under said deck or floor, or under an opening through it, substantially as hereinafter set forth.

Another part of said invention consists in the combination, with a submarine dam, inclosure, or breakwater, of boats, supports, or floats, and a set or series of anchors to hold said boats, supports, or floats in position in a tideway or current, substantially as hereinafter set forth.

Another part of said invention consists in the combination, with a portable dam, inclosure, or breakwater, and with boats, supports, or floats to be used therewith, of chains for raising the lower portion of the dam when necessary, substantially as hereinafter more fully set forth.

Another part of said invention consists in the combination, with a portable submarine dam, inclosure, or breakwater, and with boats, supports, or floats to be used therewith, of chains to hold the bottom or lower portion of the said dam, inclosure, or breakwater against the current, while it is being lowered into position for operations, or at other times, if necessary, substantially as hereinafter more fully set forth.

Another part of said invention consists in the combination, with a submerged dam, inclosure, or breakwater, and with a drill-support or drill-frame attached to the lower portion or section thereof, of a drill-support or frame ar-

Statement of the case.

ranged above said lower drill-support or drill-frame, substantially as hereinafter more fully set forth.

Another part of said invention consists in the combination, with a floating deck or flooring, supported above the water, and with a drill-support or drill-frame arranged in the lower portion of the stream or other water to guide the drills in proximity to the rock to be drilled, of a drill-support or drill-frame placed above said lower drill-support or drill-frame, all being arranged substantially in the same vertical plane, substantially as hereinafter more fully set forth.

Another part of said invention consists in the attachment to a floating support of the upper section of a portable and adjustable dam, inclosure, or breakwater, and the connection thereto of the lower sections, substantially as described, whereby the said floating support is made to keep the said dam, inclosure, or breakwater extended to the proper height, and to adapt it in that respect to any change (within certain limits) of the depth of the water, substantially as hereinafter more fully set forth.

Fig. 1 is a side elevation or view of the apparatus in its working position, showing the methods of anchoring, etc. Fig. 2 is a longitudinal vertical section on the plane indicated by the line *y y* drawn across Fig. 4, or, in other words, is a longitudinal vertical central section of the dam, showing the telescopic sections thereof, the position and direction of the drills, and the devices for sheathing or shortening the dam in a vertical direction. Fig. 3 is a vertical transverse section on the plane indicated by the line *x x*, as drawn across Fig. 2, showing the manner of guiding and bracing the drills and drill-tubes, the manner of suspending the dam from the main deck, and in broken lines the appearance of the dam sheathed or closed for removal. Fig. 4 is a plan or top view, showing the form of the dam in its horizontal section, the positions of the drills, the windlasses for raising the dam and for operating the anchors, and also giving a general view of the decks of the boats, supports, or floats to be used with the dam.

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1 1 are two boats, of sufficient floating capacity to support the deck and the working parts of the apparatus, and to also afford sufficient resistance to the downward tendency of the draft of the cables attached to the main anchors to secure these boats in their proper position. These boats are secured together by a substantial deck, the timbers and floor of which are indicated by the numbers 13 and 14, by which deck these boats are so connected as to form substantially a single float or structure. This deck or floor has an opening in its center to admit light and access to the inside of the dam, and also to allow convenient access to the drills. This opening should be about the size of the horizontal section of the largest portion of the dam, though its size may be varied according to circumstances. Though the float or support thus formed is represented as being made up of two boats, united by a deck, this form of construction is not regarded as strictly essential so long as the support provided is sufficient for the purposes required. 2 2 are sections which form the adjustable dam, inclosure, or breakwater herein-before mentioned, which sections may be made of plates of galvanized iron, or of any other appropriate material, and of suitable thickness to resist such pressure or casualty as may be likely to be thrown upon them. I prefer to make these sections, and consequently the dam, in the elongated form shown in the drawings, so as to offer the least resistance to the tide or current by which the strain upon the fore and aft anchors and chains or cables by which the boats or floats are secured in position is reduced, and the general control of the apparatus facilitated. This form is not, however, imperative. To prevent the sections 2 2 from separating, and to give them additional strength, I prefer to bend inward the upper edge of each section, except the upper one, and to attach a ledge or strip to the lower edge of each section, as shown in the drawings.

If the circumstances of the intended use of the dam are such as to make the sections 2 2 bind upon each other and prevent their moving up and down within each other with

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sufficient freedom, friction-rollers may be interposed between the sections to facilitate the vertical extension and contraction of the dam.

In the form of construction shown in the drawings each section is provided with four eyebolts, 8 8 8 8, one at each side, and one at each end, which serve as guides to the hoisting-chains 10 10, to the lower series 8_x 8_x 8_x 8_x of which eyebolts the lower ends of these hoisting-chains are attached. The lower section of the dam is provided with four sheaves or eyebolts, 9 9 9 9, the former being preferable for the chains 11 11 to pass through. These chains are intended to extend from the deck 14 through these sheaves or eyebolts to anchors, shown in the drawings as being carried out and cast fore and aft and each side of the boats, to hold the latter in position by means of chains 12 12, the object of the chains 11 11 being chiefly to support the lower part of the dam against the current, and steady it in position while it is being lowered, and in some cases they may be used to aid in holding said lower part of the dam in position while in use, especially in positions where there is a strong current with no material variation in the depth of water.

These chains are shown in the drawings as being hooked onto the railing of the float; but in practice they are designed to be operated by windlasses similar to those shown for operating the chains, 10 10. The chains 11 and 12 may be provided with separate anchors, instead of being attached to the same anchor, should circumstances render this desirable. The drills, 4 4, work in tubes, 7 7, which tubes are provided upon their lower ends with threads, which screw into the lower longitudinal brace, 6, while the extreme threaded end of the tube receives a nut under the transverse braces 5, thus securing the braces 5 and 6 together, to form the lower drill-frame, and also at the same time securing the drill-tube in the frame thus formed. The outer ends of the braces 5 are bolted or otherwise secured to the lower section 2 of the dam, so that when this lower section is

Statement of the case.

properly secured in position for drilling, it shall hold this lower drill-frame in position, and thus give a firm support to the drills in near proximity to the rock to be drilled.

The upper ends of the drill-tubes 7 7 may be permitted to slide freely in the guide-plate 18, as the distance between this guide-plate and the braces 5 and 6 is increased or diminished by the extension or contraction of the height of the dam. It is not, however, deemed essential that these tubes 7 7 should always be of the full length shown in the drawings, but a short section, sufficiently long to prevent the drill from being lifted out of it during the stroke thereof, will in many cases answer, and in some cases may, perhaps, for some reasons, be preferred; and the tube, instead of being rigidly bolted to the frame, as shown in the drawings, may be set in a rocking joint therein.

The upper section 2 of the dam is represented in the drawings as being supported in proper position by being hung to the deck by means of links and bolts 16 and 17; and for some reasons and purposes I prefer this as the best means for keeping the dam extended when in use, as, among other things, it makes the depth of the water adjust the dam to the proper height; but I do not regard this mode of support as an indispensable part of the invention. 3 3 are bars of iron fitted to slide vertically and freely in sockets attached to the lower section of the dam, and are represented as being pointed, to better take hold of the rock or bottom, upon which the dam may be let down. Said bars, 3 3, are designed by their length and free play, to adapt themselves to any inequalities or irregularities in the said rock or bottom, and to operate as self-acting anchors to hold the lower section of the dam steadily and firmly in place.

For the convenience of raising them out of the water when desirable, a cord, wire, or chain may extend from each of these self-anchors to the deck.

In using the apparatus hereinbefore described, the lower sections of the dam are drawn up around the upper section, for the convenience of transportation, and the apparatus

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taken to the point where it is to be used, which may be done by a tow-boat, or there may be steam-power for that purpose placed on board of the boats, supports, or floats, which form a part of the apparatus. The fore and aft and side anchors are then carried out and placed, and the chains therefrom drawn taut, so as to hold the boat in position, the boats being placed end onto the current, or to the general direction of the tide. The chains 10 are then slacked off, so as to allow the lower section of the dam to descend, care being taken to keep the chains 11 at the end toward the current or tide sufficiently taut to keep the dam in a perpendicular position, and in this way the dam is lowered till it strikes the bottom, upon which it is to operate. If the water is liable to rise, both the chains 10 and 11 should be slacked off still farther, in order to prevent their raising the dam out of place. There may, however, be cases in which it may be desirable to use the chains 11, or some of them, to hold, or aid in holding, the lower part of the dam in place.

When the dam or the lower part thereof is lowered to its place and strikes the bottom, as above stated, the self-anchors 3 3 adjust themselves to the inequalities of the rock, as hereinbefore intimated, in which position they are likely to take hold of the rock, as indicated in the drawings, and hold the dam securely in place.

When the apparatus shall have been secured in position, as above described, the drills may be put in operation, and operated by any of the known and satisfactory means for operating drills, and when the drills shall have penetrated the proper depth, the charges of powder or other blasting material may be placed in position, the apparatus removed, and the blast fired, after which the apparatus may be returned over an adjacent portion of the rock to be drilled and blasted, or over the same portion, and the dam used to protect the divers and the removal of the debris. In a tideway there will always be a tendency of the tide, when its strength increases and the tide falls, to move the boats slightly in the direction of the tide, and as the strength of the tide dimin-

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ishes during its rise, the opposite effect is produced ; but this change of position and its amount may readily be detected by the working of the drills, and any variation of their shafts from a vertical position, and may be easily corrected by taking up and letting out the proper anchor-chains, as such occasion may require.

It will be obvious, from the foregoing description and the accompanying drawings, that the current will enter the dam, to some extent, through depressions in the rock under it, and also slightly through the joints of the dam, so that absolute stillness of the water inside of the dam will not be produced ; nor is it anticipated or indispensable ; but the intention of this dam is to form an inclosure or breakwater which shall so check the current as to facilitate drilling and other operations within it.

It will be seen also that by the construction of the dam in sections, entering one within another, and extended or shortened by a substantially-rectilinear movement, like that of drawing out or sliding in the joints of a telescope, as described, a substantial dam, inclosure, or breakwater may be produced, capable of protecting the divers and the work to be carried on within it—a result which evidently could not be realized from a series of vertically-folding plates divided in lengths, and having no support except at the top of the water.

I claim as my invention—

1. A submarine inclosure or breakwater, made in sections, one entering within another, substantially as described—that is to say, so that, by a sliding edgewise or vertical movement as contradistinguished from a folding movement, the height of the entire inclosure or breakwater may be increased or diminished by the diminution or increase of the entrance of one section within another, to adapt said inclosure to the different depths of water, or to facilitate its transportation from one place to another.

2. The combination, with a portable dam, breakwater, or inclosure, of the sliding bars or anchors 3 3, whereby said

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bars or anchors may be allowed to descend into or upon inequalities in the surface to be operated upon.

3. The arrangement of the open floating deck 14 in relation to a portable submarine dam, inclosure, or breakwater, substantially as described—that is to say, with the opening in the deck over the space inclosed or protected by the said submarine dam, inclosure, or breakwater, by which arrangement operations necessary within the said dam, inclosure, or breakwater may be carried on through the opening in said deck, substantially as hereinbefore set forth.

4. The combination, with a portable dam, breakwater, or inclosure, of a drill support or frame attached to said dam, inclosure, or breakwater.

5. The arrangement, in the lower portion or section of a submarine dam, breakwater, or inclosure, of a drill support or frame attached thereto.

6. The combination, with a floating deck or floor supported above the water, of a submerged drill-frame, arranged directly under said deck or floor, or under an opening through it, substantially as hereinbefore set forth.

7. The combination, with a portable submarine dam, breakwater, or inclosure, of boats, supports, or floats, and a set or series of anchors to hold said boats, supports, or floats in position in a tideway or current, substantially as hereinbefore set forth.

8. The combination, with a portable dam, breakwater, or inclosure, and with boats, supports, or floats to be used therewith, of the chains 10, for raising the lower portion of the dam when necessary, substantially as hereinbefore set forth.

9. The combination, with a portable submarine dam, breakwater, or inclosure, and with the boats, supports, or floats to be used therewith, of the chains 11, for holding the bottom of the dam against the current while it is being lowered, or afterward, substantially as hereinbefore set forth.

10. The combination, with a submarine dam, inclosure, or breakwater for breaking the force of the current, and with

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a drill-frame attached to the lower portion or section thereof, of a drill-frame arranged above said lower drill-frame, substantially as hereinbefore set forth.

11. The combination, with a floating deck or flooring supported above the water, and with a drill-frame arranged in the lower portion of the stream, to guide the drills in proximity to the rock to be drilled, of a drill-frame placed above said lower drill-frame, all being arranged in the same vertical plane, substantially as hereinbefore set forth.

12. The attachment of the upper section of a submarine sectional dam, inclosure, or breakwater to a floating support, and the connection of the lower sections of the said dam, inclosure, or breakwater to the said upper section, substantially as described, whereby the said floating support is made to keep the said dam, inclosure, or breakwater extended to the proper height to adapt it, in that respect, to any change (within certain limits) of the depth of the water, substantially as hereinbefore set forth.

SAMUEL LEWIS.

Witnesses :

THOS. P. HOW,
WILLIAM H. CAMMEYER.

Mr. Thomas P. How, for appellants :

In the first place, we remark that the patent is, in itself, *prima facie* proof of the utility of the invention, and unless, therefore, this defendant produces preponderating proof that it is worthless, his defense fails.

Washburn v. Gould, 3 Story, 143; Troy Iron and Nail Factory v. Corning, 1 Blatch. 472; Winans v. N. Y. & H. R. R., 4 Fish. 7; Corning v. Burden, 15 How. 270 [6 Am. & Eng. 69]; Parker v. Stiles, 1 Fish. Pat. Rep. 335; Page v. Ferry, 1 Fish. 311.

It appears from the evidence, that in 1867 the defendant Newton made a report to the Chief of Engineers in regard to the removal of rock in the harbor of New York, in which he expresses the hope that many better methods than the

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one he suggests as occurring to him may be found for the solution of this difficult problem, and predicts that, without doubt, a well considered attempt to push the work will be the means of stimulating mechanical invention suited to that end.

This report was published, and, in response to it, the complainant Lewis, supposing this appeal to inventors to be made in good faith, in 1868, invented and patented the invention for the unlawful construction and use of which this suit is brought.

It appears further, that, about the time of the grant of the patent, and subsequently, several interviews took place between them, in which Lewis described his invention to Newton, and requested him to recommend it to the Government, so that he might get it adopted, which Newton refused to do; but finally, at the last of these interviews, and after he had gained from Lewis a complete knowledge of the invention, announced to him his intention of taking and using any patented invention which it might suit his purpose to use in the work.

Of course, this announcement does not constitute an infringement of the patent, but it foreshadowed one.

This announcement gives the key to the whole transaction, and indicates with unmistakable force, that the infringement now complained of was a matter of deliberate intention from the beginning.

Newton's excuse now is that the invention was constructed under the authority of the Secretary of War, and for the benefit of the United States. If the Constitution did not expressly provide that private property shall not be taken for public use without due compensation, or it could be shown by some authority higher than the Constitution that the Secretary of War had the right to give authority to so take private property for public use, it might then be necessary to inquire what this authority was, and how it was obtained, for it is evident that this authority must be specific on the one hand, and on the other that it must

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have been even obtained through any fault of the defendants, or either of them. No such authority, however, is produced. An examination of the answers of this defendant Newton to the cross-questions 20-32, indicates that all the authority there was came from the Chief of Engineers, instead of the Secretary of War, and there is not a line or word of proof to show that the Secretary of War was ever consulted about the matter, or knew anything of the project till the machine was constructed and in operation.

It will be contended that, because this invention has been used for the benefit of the Government, the defendants are therefore not liable for infringement. If our bill was for profits *merely*, it might possibly be worth our while to discuss this point more extensively, but our complaint is drawn under the act of 1870, and is for damages as well as for profits. Whatever, then may be the rights and liabilities of the Government in the matter, it is entirely clear that the defendant, Newton, in taking this invention, has done that which he had no right to do, and is liable for the wrong he has done. Nor does it make any difference whom he associated with himself in the infringement, or whose money he used in carrying it out; and if he really, deceived the Government, and obtained as he claims leave from the Chief of Engineers to construct a part of the machine shown in Exhibit D, that does not help the case. This deception of the Chief of Engineers, if it produced the effect of obtaining this leave, should, instead of being regarded as a mitigation, be regarded as an aggravation of the case against him; for certainly it cannot be to the credit of any man, either morally or legally, to say that he has misled his Government or any officer thereof into a wrongful act.

Mr. Edwin B. Smith, for appellees:

The machine described in letters patent No. 80,492 is neither new nor useful. It is not a new discovery of these patentees, because the complainant, Lewis, was not the sole

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and original inventor of it. He testifies that it was Gen. Newton's report of 1867 to the War Department that first drew his attention to the subject. In that report he suggests means of breaking the current substantially the same in principle as those subsequently adopted by Lewis.

As described, it was not a useful invention. It was not a successful embodiment or development of the principle suggested by Gen. Newton, but failed from lack of appreciation of the difficulties of practical operation. Its defects were such as to prevent that machine from ever becoming of any utility.

The only use made of the machine operated upon the reefs in New York harbor was by the United States. Conceding that the Government would be liable to make compensation to the complainants, if it was their machine that was used, *United States v. Burns*, 12 Wall. 252 [8 Am. & Eng. 458]—though such is not the English doctrine, *Feather v. Queen*, 6 Best & Smith, 283—yet the *mere* agent of the United States ought not to be held responsible. It was the action of the Government through the War Department, whose orders Gen. Newton was bound to obey.

Gen. Newton neither did nor could receive any profits from the use of whatever machine he employed in his work for the United States; therefore, he is liable for none. *Rubber Co. v. Goodyear*, 9 Wall. 804 [8 Am. & Eng. 150]; *People v. Supervisors*, 4 Hill, 23.

Mr. Justice CLIFFORD delivered the opinion of the court:

Holders of valid letters patent enjoy, by virtue of the same, the exclusive right and liberty of making and using the invention therein secured, and of vending the same to others to be used as provided by the act of Congress; and the rule of law is well settled, that an invention so secured is property in the holder of the patent, and that as such the right of the holder is as much entitled to protection as any other property. during the term for which the franchise or

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the exclusive right or privilege is granted. *Seymour v. Osborne*, 11 Wall. 516 [8 Am. & Eng. 290]; 16 Stat. at L. 201.

Inventions may be assigned before they are patented; and it appears that Samuel Lewis claims to have been the original and first inventor of the patented improvement; that he, without having applied for a patent, assigned all his right, title and interest in the invention to the first named complainant, that the assignee made due application for a patent, and that the patent was duly granted to him for the term of seventeen years; and that the patentee, before the suit was commenced, assigned one undivided half part of the same to the other complainant, together with the like proportion of the claims and rights of action (a) of any infringement of the patent by the making, use or sale of the patented improvement.

Due evidence of the assignments was exhibited; and the complainants allege that the respondents have infringed the patent, as more fully set forth in the bill of complaint; and they pray for an account and for an injunction. Service was made; and the respondents appeared and filed separate answers.

Briefly stated, the defences set up in the respective answers are as follows: (1) That Samuel Lewis is not the original and first inventor of the patented improvement. (2) That the patented improvement is neither new nor useful, and was not the proper subject for a patent. (3) That they have never infringed the patent by making, using or selling the patented improvement. (4) That the use, if any, they have made of the patented improvement was done under the directions of the United States, and as their agents or officers.

Proofs were taken by both parties; and, the parties having been fully heard, the Circuit Court entered a final decree in favor of the respondents, dismissing the bill of com-

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(a) Otto inserts "which had accrued by reason."

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plaint. Due appeal was immediately taken by the complainants to this court.

Engineers and practical operators have long known and still admit that the work of blasting rocks under water is attended with many and great difficulties. Efforts have been made to overcome those difficulties; but they have never been entirely successful, nor do the complainants pretend that the patented improvement will meet every requirement in that regard. What they allege is, that their assignor is the original and first inventor of a new and useful improved portable and adjustable dam for the purpose of producing still water in which to operate for the blasting and removal of obstructions in rivers and other water-courses.

Such obstructions, where they exist in rivers or in channels effected by the ebb and flow of the tide, have the effect to contract the water-course and to accelerate the current or flow and, consequently, to increase very much the difficulties of the operator in his endeavors to blast the rocks or to remove the obstruction, except in seasons of low water, or when the tide is down.

Difficulties of the kind almost insuperable, it must be admitted, do exist when attempting to move such obstructions in large running streams or in deep channels affected by the tide, and that the description of the same given by the patentee in the introductory portion of his specification is not very much exaggerated (*b*). Different localities are there referred to, where, from the nature of the bottom of the stream or channel, a coffer-dam could not be constructed and where the drilling by hand from the surface would be impracticable, owing to the depth of the water and the strength of the current, as evidence to show that the invention, if successful, will be of great public utility and importance (*c*).

24 U. S. 337.

(*b*) Otto substitutes for from *b-c* "As evidence to show that the invention, if successful, will be of great public utility and importance, that part of the specification refers to different localities, where, from the nature of the bottom of the stream or channel, a coffer-dam could not be constructed and where the drilling by hand from the surface would be impracticable, owing to the depth of the water and the strength of the current."

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Means of a character to remove such obstructions, the specification states, were unknown prior to the patented improvement, and that important water thoroughfares, for the want of adequate means to accomplish such an end, are either entirely or partially closed to vessels of large draught, which may, by the use of the patented machine, be converted into highways for the largest ships engaged in commerce and navigation.

Suppose the alleged improvement will effect the described results, or will even facilitate to a considerable extent the removal of such obstructions, all, it would seem, must concede its value and utility; and the patentee proceeds to state that the main object of the same is to enable workmen to continue their operations without suspension or impediment from the strength of the current, the ebb or flow of the tide, or the varying depth of the water. All these results the patentee professes to believe can be accomplished by the mechanism described in the specification and illustrated in the annexed drawings; but it is evident, from the language of the specification, that the supposed inventor had never put the apparatus which he describes to any practical use or test. Enough appears to justify the conclusion that he believed in the theory of the improvement; and that he felt much confidence that the described mechanism would work out the described results.

Having set forth the object and aim of the improvement, the patentee then proceeds to describe the apparatus by which they are to be accomplished, as follows: two boats are prepared (double-enders, as shown), on one or both of which is an engine of requisite power, with propeller and machinery complete for moving the boat, raising the anchors, varying the depth of the dam, and operating the drills. These boats or hulls are connected by a substantial deck, which has an opening in the center equal to the horizontal area of the dam, for the purposes of access, light, etc., for the diver. From the deck is suspended the telescopic or sectional portion of the

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apparatus, with the chains and attachments, all previously adjusted and ready to be drawn through their respective openings in the deck.

By the description it also appears that the manner of constructing the telescopic or sectional portion of the apparatus is to prepare a series of plates of galvanized iron, or any other proper material, of suitable thickness, and bend and fasten them into the form shown in the drawings, which is that of an acute parallelogram, one sliding vertically within another, so as to offer the least possible resistance to the tide or current, thereby easing the work of the anchors, and contributing generally to the control of the apparatus.

Each division of the dam is bent inwards at its upper edge, and at its lower edge has a strip fashioned so as to prevent the sections from separating. Every section is likewise provided with four eyes or eyebolts, one at each side and one at each end, which serve as guides to the several sections while operating, the eyebolts on the bottom section being attached permanently to the chains through which the dam is operated, and the bottom section being also provided with four framed wheels or eyebolts through which the side anchor-chains pass, which are to be operated by windlasses, and which extend from the boats, similar to those shown for the operation of the dam above, through the eyebolts on the bottom section, and then outward to the side anchors. Chains extend directly from the boats to the side anchors, and from the ends of the boats directly to the end anchors, the dam being operated by windlasses.

Drills are provided which work in tubes, the lower ends of the tubes being fastened into braces attached to the bottom section of the dam. Tubes of full length, it is stated, are not deemed essential, as a section of sufficient height above the braces on the bottom section of the dam to prevent the drill from being entirely withdrawn from the tube during a stroke, is for some reasons to be preferred, if the tube is properly set with a rocking joint in the lower brace.

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Self-anchors, so-called, are also provided, which are bars of iron formed and moving in sockets, as shown in the drawings, and which by virtue of their length and free play, adapt themselves to the irregularities of the bottom, and take a rigid and steady hold during the process of drilling. Anchors of the kind are connected with the deck, so as to be taken out of the way when desirable, and the telescopic apparatus is suspended from the deck by four links and bolts, and the several chains are drawn through their respective openings and attached to their proper windlasses.

All the appurtenances, including the boats and dam, being complete and the sliding sections closed, the machine is taken to the spot where it is intended to begin work, the anchors are put out, and the dam is lowered.

Intelligent description of the mode of anchoring the machine and putting it in operation is also given in the specification, as follows: (1) An anchor is let go and its cable paid out to its full length, the boat moving till the anchor takes hold and the chain is taut. (2) Then the other anchor is dropped and the two chains taken up, till the floating structure is held steadily by the two anchors. (3) The side anchors are next launched from a lighter or attendant boat. (4) When these anchors are placed, it is suggested that the diver should be sent down to explore the bottom, to see whether any change of position is desirable. (5) Change may be made in any direction by letting out one cable and taking up another, if it appears that the change will give the self-anchors a better face for work when the dam is lowered. (6) When the drills have penetrated to the desired depth, they are withdrawn, and the diver goes down and inserts the charges. (7) The apparatus is then removed and the charges fired, when the machine is replaced as before, and the work continued.

Four claims are made in the specification, as follows: (1) The construction and arrangement of a portable and adjust-

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able dam in sliding or telescopic sections, in the manner and for the purposes described. (2) The combination of the self-anchors with the dam, in the manner and for the purposes set forth. (3) The combination of the boats, supports or floats with the dam and the arrangement of anchors to hold the boats in position, in the manner and for the purposes described. (4) The combination and arrangement of windlasses, chains and boats with the dam, so that by the construction thereof a series of drills may be operated within and inclosed by the dam, in the manner and for the purposes described in the specification.

Persons seeking redress for the unlawful use of letters patent in which they have an interest are obliged to allege and prove that they, or those under whom they claim, are the original and first inventors, and that the same have been infringed by the party against whom the suit is brought. Both of these allegations must be proved by the party instituting the suit; but the patent, if introduced in evidence by the complainant, affords *prima facie* presumption that the supposed inventor is the original and first inventor of the patented improvement. Evidence to overcome that presumption is admissible, provided that notice of such defense is given in the answer, as required by the rules of equity practice. *Seymour v. Osborne*, 11 Wall. 516 [8 Am. & Eng. 290]. Notices of the kind were not given in this case, and it follows that the *prima facie* presumption must prevail.

Infringement is alleged by the complainants, and the burden is upon them to prove the allegation, as it imputes a wrongful act to the respondents. Such an issue cannot be understandingly determined without first ascertaining the true nature of the invention as embodied in the claims of the patent, when the same are properly construed in view of the descriptive portions of the specification.

Of all the claims of the patent, the first is by far the most important, and embraces all that is embodied in the other

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three. It is the construction and arrangement of the patented improvement called in the claim a portable and adjustable dam in sliding or telescopic sections, in the manner and for the purposes set forth in the specification.

Argument to show that the dam is to be suspended from the main deck is unnecessary, as the statement is three times repeated in the specification of the patent: (1) Fig. 3 of the drawings, the specification states, shows the manner of suspending the dam from the main deck. (2) It is stated that the deck has an opening in the center equal to the horizontal area of the dam, and that from the deck the telescopic or sectional portion of the apparatus is suspended. (3) That the telescopic apparatus is suspended from the deck by four links and bolts.

Beyond question, these references show that the patentee, when he claims the construction and arrangement of a portable and adjustable dam in sliding or telescopic sections, means a dam suspended from the deck when in use, and intends to be understood that such suspension of the dam, in the manner and by the means shown, is a necessary element of the claim.

Evidently the sections are not only free to slide in the manner described, but when the dam is in use the sections are to adjust themselves to varying depths of water, such as are caused by the ebb and flow of the tide, which has the effect to vary the distance the dam is suspended from the bottom, showing that the top section must at all times be connected with the boat by links and bolts, as stated in the specification, or by equivalent means, and that the bottom section must be permanently connected or attached by chains or equivalent means, with a hoisting apparatus arranged on the boat.

Unless the top section is connected with the boat, the letting down of the bottom section will cause all the other sections to go down with it, and they will not be opened out telescopically, as described by the patentee. On the other

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hand, if the top section is connected with the boat, and the bottom section is not connected with the hoisting apparatus on the boat, the dam cannot be lifted, and the bottom section will always rest where the machine is placed; or, if the water is deep enough, all the sections will remain extended to their full length, showing that no dam constructed and arranged in the manner described in the descriptive portion of the specification can be within the first claim of the patent, unless the sections are free, at all times when the dam is in operation, to slide on each other, nor unless the top section is attached to or suspended from the boat, nor unless the bottom section is connected with a hoisting apparatus on the boat.

2. Self anchors combined with the dam constitute the second claim, which is merely a sub-division of what is embodied in the first claim. Viewed in that light, it will not be necessary to enter into any extended explanation as to its scope and signification.

Remarks already made show that the dam with telescopic sections was to be self-adjusting to tidal and other variations in the depth of the water where the machine is to be operated, and it is equally clear that the self anchors must be free to slide in their sockets with the rise and fall of the bottom section, in order that they may always rest on the bottom where the machine is placed for operation. Unless the bottom section is free to slide on the self anchors, should the bottom section be raised by an increase in the depth of water, it would raise the lower ends of the self anchors from the bottom, and might stop the working of the drills, which shows that the self-adjustment feature of the anchors is necessary to maintain the connection of the dam with the bottom, for the reason that the dam is suspended from the deck, and that the connection of the dam with the bottom is liable to be severed by the receding of the boat from the bottom, as the tide rises beyond a depth equal to the extreme extent of the sections, showing that

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the feature of self-adjustment in the self anchors is inseparable from the feature of the suspension of the telescopic dam from the boat, sufficient explanation of which has already been given.

Much aid has been derived from the very able opinion of the district judge in defining the nature and mode of operation of the patented invention as embodied in the first and second claims of the patent; and the court here also concurs with the district judge in the definition which he gives of the words "self-anchors" and "dam," as used in the claims and specification. As there employed, the term self-anchors means anchors capable of self-adjustment, by having at all times free play, because not attached to their sockets nor moving with the bottom section to which the sockets are attached, which sufficiently explains the difference between the word anchor, as commonly used, and the term self anchors, as used in the description of the patented apparatus.

Where the claim of the patent is for a combination, it is necessary to understand the meaning of the several devices of which the combination is composed. In the second claim, the combination is the self anchors with the dam, and the term "the dam," as there used, means the dam suspended from the boat, with the described devices to accomplish in its movement and operation the functions already explained; from which it follows that no combination can be held to be within the second claim, unless it be a combination of such self anchors with such a dam, constructed and arranged in the manner described, so as to allow of such self-adjustment in the self anchors.

Two other claims are annexed to the specification; but the language of those claims are sufficiently explicit to speak their own construction without any special exposition, nor is any special explanation necessary, in the view taken of the case, as the decision of the question of infringement must depend chiefly upon the first and second claims of the patent.

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Before comparing the patented machine with the apparatus used by the respondents, it will be useful to advert briefly to certain other issues tendered by the respondents in their answers. Preliminary to that, it should be remarked, that the respondent first named in the pleadings is an engineer in the employment of the United States, and that the other respondents are his agents and *employés* in the same service. In their answers they separately deny: (1) That they have made, constructed, or used the alleged invention of the complainants, or any substantial or material part of the patented machine. (2) That they or either of them have ever originated or planned any infringement or violation of the complainant's patent. (3) That they ever claimed to be the inventors of a still-water dam or apparatus such as that described in the bill of complaint. (4) That they ever made a model of any invention belonging to the complainants, or ever caused any drawings of the same to be constructed for any purpose. They, or the principal respondent, admit that he invented and devised a machine or apparatus for use as a caisson coffer-dam and diving-bell in excavating and removing rocks at certain reefs in New York harbor, that the same was constructed by and at the public expense, and has since been used solely and exclusively in the prosecution of the work to which the principal respondent has been assigned by the public authorities.

Public employment is no defense to the *employé* for having converted the private property of another to the public use without his consent and without just compensation. Private property, the Constitution provides, shall not be taken for public use without just compensation; and it is clear that that provision is as applicable to the Government as to individuals, except in cases of extreme necessity in time of war and of immediate and impending public danger. *Mitchell v. Harmony*, 13 How. 115; *U. S. v. Russell*, 13 Wall. 623.

Section 22 of the Patent Act provides that every patent

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shall "contain a grant to the patentee, his heirs and assigns, for the term of seventeen years, of the exclusive right to make, use and vend the said invention or discovery throughout the United States." 16 Stat. at L. 201.

Agents of the public have no more right to take such private property than other individuals under that provision, as it contains no exception warranting any such invasion of the private rights of individuals. Conclusive support to that proposition is found in a recent decision of this court, in which it is held that the Government cannot, after the patent is issued, make use of the improvement, any more than a private individual, without license of the inventor or making him compensation. *U. S. v. Burns*, 12 Wall. 246 [8 Am. & Eng. 458].

Suppose that is so, then it follows that the decision in the case before the court must depend upon the question of infringement.

Four principal propositions are maintained by the respondents, responsive to that charge: (1) That the caisson coffer-dam and diving-bell which they use is not a portable and adjustable dam constructed and arranged in sliding or telescopic sections, as described in the specification of complainant's patent. (2) That it does not contain any combination of self anchors or self-adjusting supports. (3) That there is not any combination of a boat or boats with the caisson coffer-dam or diving-bell which they use, nor is there any boat or boats used or combined therewith in any manner or for any purpose similar to those set forth in the specification of the patent. (4) That there is not any combination of windlasses, chains or boats in connection or combined with the caisson coffer-dam or diving-bell used by the respondents.

Contracts, it seems, had been made for the removal of rocks in the channel of the New York harbor, and the record shows that the respondent made a report to the War Department, in which he described the difficulties and as-

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cribed the want of success to the imperfections in the machinery employed. Attempt was made by him to construct an apparatus for the purpose; and it appears that he subsequently filed a *caveat* in the Patent Office for the same, called, Improvements in the Mode of Constructing a Caisson Cofferdam and Diving-bell for the purpose of Conducting Operations in Waters with Rapid Currents. Authority was subsequently given to him by the War Department to construct an apparatus embodying the arrangement set forth in the *caveat* and his antecedent report, from which it appears that an iron dome is to be sunk on the rock to protect the drills and the diver from the velocity of the current, which, though lowered and raised from a boat, is yet entirely disconnected therefrom, and is uncontrolled thereby when in position. Drill-tubes are arranged within the dome in which the drills work, being dropped by their own weight, and raised by connection with motive power on the boat.

Experimental use of the apparatus commenced late in the fall of 1870, and it was found to work successfully, and it appears that it was for some time in constant use, and that it is the use of the same which it is alleged infringes the complainants' patent.

In that apparatus the dome is let down through the well-hole in the boat. Movable legs are provided for use when the bed is hard and uneven, which are attached to the lower edge of the dome, and fall by their own gravity until they bear on the bed in such a manner as to insure the horizontal position of the lower edge of the dome, the legs being kept to their bearings by self-acting cams which hold them permanently in place. When the dome is properly located, it is then detached from the lowering apparatus, and becomes a structure firmly located on the bed of the channel, having no suspension from the boat or any floating structure. Of course the apparatus has drill-tubes, but they are fixed to the inside of the dome, and the drills are raised by lifting-engines on the boat and dropped to the work by their own

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gravity, working vertically and without friction, because the dome stands erect and immovable. Both the dome and the drill-tubes are unaffected by any motion in the boat; and the attachments to the drills being by loose connections, the action of the drills is also practically unaffected by such motion within the range to which it is limited by proper anchorage and by allowing sufficient play between the face of the well-hole and the side of the funnel, which projects up from the center of the dome.

Without more, these suggestions are sufficient to show that the apparatus used by the respondents is substantially different from that of the complainants, for the following reasons: (1) Because the dome when in position for work is not suspended from the boat or any other floating structure. (2) Because the funnel of the dome in the respondents' apparatus, though it is capable of being adjusted at different heights, is not and never was self-adjusting to varying depths of water. (3) Because it has no self anchors, free to slide and self-adjusting at all times while the apparatus is in use.

Prior observations are sufficient to show that these features in the apparatus of the complainants are necessary features in the operation of the patented improvement, as clearly indicated in the first and second claims of the patent; and if so, they are abundantly sufficient to substantiate the proposition that the apparatus of the respondents is substantially different from the machine described in the complainants' specification.

Proofs were introduced by the respondents which showed that no apparatus such as is described in the specification of the patent was ever constructed and put into practical operation, and the evidence tends to show that the apparatus, if constructed as described, would be worthless.

Serious difficulty, it is apparent, would arise, if the mode of anchoring the dam there described should be adopted, as its tendency certainly would be to render it impossible to work the drills with useful effect.

Notes and Citations.

Discussion is scarcely necessary in respect to the third claim, as the very statement of it shows that it is not infringed by anything in the apparatus of the respondents, as their apparatus has no anchors connected with the dome, nor which connect the dome with the boat, which is an essential feature of the third claim in the patent.

In order to make the dam an element of the combination set forth in the third claim, the anchors connected with the boat by chains passing through eyebolts on the bottom section of the dam must be included ; and as the anchors so connected and operating are wanting in the apparatus of the respondents, it follows that it does not infringe the apparatus of the complainants.

Nor is it necessary to enter much into the discussion of the fourth claim of the patent, as it has already sufficiently appeared that the apparatus of the respondents has no chains connected with the dome, nor do the respondents operate the drills in the manner or by the means described in the complainants' specification. Instead of that, drill-grooves in the complainant's apparatus are all connected below with the bottom section of the dam, and that is connected with the boat by chains and a hoisting apparatus, and the upper section of the dam is fixed to the boat with the other sections hanging from it. Unlike that, the drills in the apparatus of the respondents are operated in reference to the rock without any chains connected with the dome, showing that the apparatus is substantially different from that of the complainants in respect to every claim of the patent.

Suffice it to say, without pursuing the examination, that we are all of the opinion that there is no error in the record.

Decree affirmed.

94 U. S. 237-238.

Notes :

2. Patent is *prima facie* evidence of first and original inventorship:
Railroad Co. v. Stimpson, 14 Pet. 448 [4 Am. & Eng. 324].

Notes and Citations.

Blanchard v. Putnam, 8 Wall. 420 [8 Am. & Eng. 107].
Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290].
Mitchell v. Tilghman, 19 Wall. 287 [9 Am. & Eng. 174].
Smith v. Goodyear D. V. Co., 93 U. S. 486. [p. 1 *ante*.]
Roemer v. Simon, 95 U. S. 214. [p. 348 *post*.]
Bates v. Coe, 98 U. S. 31.

6. Government liability for infringement:

U. S. v. Burns, 12 Wall. 246 [8 Am. & Eng. 458].
James v. Campbell, 104 U. S. 356.
United States v. McKeever, 23 O. G. 1530; and see also
Hollister v. Benedict Mfg. Co., 113 U. S. 59.

Patent in suit:

No. 80,492. Lewis S. July 28, 1868. Reissue No. 6,249.
January 26, 1875. Still Water Dam.

OTHER SUITS ON SAME PATENT:

Cammeyer v. Newton, 1874. 12 Blatch. 122; 1 Ban. & Ard. 294;
5 O. G. 753.
Cammeyer v. Newton, 1879. 4 Ban. & Ard. 159; 16 O. G. 720.

Notes and Citations.

Cited:

IN SUPREME COURT IN:

Fuller v. Yentzer, 1877. 94 U. S. 288; Bk. 24 L. ed. 103.
Fletcher v. Blake, 1880. Bk. 26 L. ed. 156.

IN CIRCUIT COURTS IN:

McKeever's Case, December, 1878. 14 Ct. of Claims 396; 23 O. G. 1525; 8 Reporter, 455; 18 O. G. 979.
Campbell v. James, August, 1879. 17 Blatch. 42; 4 Ban. & Ard. 456.
Colgate v. International Ocean Tel. Co., November, 1879. 17 Blatch. 308; 4 Ban. & Ard. 609; 9 Rep. 166; 17 O. G. 194.
Allen v. Mayor, etc., of the city of N. Y., December, 1879. 17 Blatch. 350; 5 Ban. & Ard. 57; 17 O. G. 1281.
Wren v. Spencer, December, 1879. 5 Ban. & Ard. 61; 18 O. G. 857.
Faulks v. Kamp, January, 1880. 17 Blatch. 432; 5 Ban. & Ard. 73; 3 Fed. Rep. 898; 9 Rep. 304; 17 O. G. 851.

IN TEXT BOOKS:

2 Abb. Pat. Law. 1886, p. 124.
Merwin on Pats. Invt., 1883, p. 692.
Walker on Pats. 1883, pp. 101, 107.

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Oct., 1876.] CAMMEYER v. NEWTON.

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Syllabus.

HENRY W. FULLER ET AL., APPELLANTS, v.
ENOCH S. YENTZER ET AL.*

94 (4 Otto) U. S. 288 - 299. Oct. Term, 1876.

[Bk. 24, L. ed. 103; 11 O. G. 551.]

Affirming *Ibid*, 6 Biss. 203.

Argued January 12, 15, 16, 1877. Decided March 2, 1877.

Result. Patentability. Construction of claims in view of specification. Burden of proving infringement. Infringement, how determined. Particular patent construed. Combination. Patentability. Infringement. Substitution of equivalent.

1. A patent will not be sustained if the claim is for a result, a principle, an idea, or any other mere abstraction. (p. 160.)
2. Where the claim immediately follows the description of the invention, it may be construed in connection with the explanations given in the description, and if the claim contains words referring back to the specification, it cannot properly be construed in any other way. (p. 161.)
3. It being understood that a result is not patentable, claims which read "forming one, two or more creases in cloth by means of, etc.," and "marking a line on the surface of cloth or other material sewed in a sewing machine, by means of, etc.," construed to be for the described apparatus for producing the results named. (p. 163.)
4. The burden of proving infringement is upon the complainants. (p. 166.)
5. Where the invention is embodied in a machine, the question of infringement is best determined by a comparison of the machine or apparatus constructed or used by the respondent with the mechanism described in the specification of complainant's patent. (p. 167.)
6. The claims of letters patent No. 28,633, H. W. Fuller, June 5, 1860, Marking Cloth for Sewing Machines, *construed* to be for a combination of old elements, and not for a result, the distinct features being the elevated bar projecting out of the

* See Explanation of Notes, page III.

Statement of the case.

frame attached to the presser-foot, the described spring arm, the bar projecting out from the needle arm with the described points and the bed-plate on which they strike; *held*, not infringed by the apparatus of patent No. 113,610, since none of the devices employed in one can be substituted for those of the other, so as to render the apparatus operative to effect the described result without reconstruction and invention. (p. 167.)

7. A patent may be granted for a new combination of old elements or ingredients if it produces a new and useful result ; but, in such case the invention consists merely in the new combination, and the patent therefor is not infringed by a substantially different combination, even though it includes the exact same elements or ingredients. (p. 170.)
8. The rights of a patentee for a mere combination of old ingredients are not infringed unless it appears that the alleged infringer made, used, or sold the entire combination. (p. 170.)
9. The substitution of a known equivalent for one of the ingredients of a patented invention is not a good defense for an infringer ; but, if the ingredient was a new one, or performed a substantially different function, or was not known at the date of the patent as a proper substitute for the one omitted, there is no infringement. (p. 170.)

[Citations in the opinion of the Court:]

- Burr v. Duryee, 1 Wall. 531 [7 Am. & Eng. 224]. p. 161.
Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290]. p. 161.
Cammeyer v. Newton, 94 U. S. 225 [p. 98 *ante*]. p. 166.
Gill v. Wells, 22 Wall. 1 [9 Am. & Eng. 471]. p. 170.
Gould v. Rees, 15 Wall. 187 [9 Am. & Eng. 39]. p. 170.
Prouty v. Ruggles, 16 Pet. 336 [4 Am. & Eng. 351]. p. 170.
Vance v. Campbell, 1 Black, 427 [7 Am. & Eng. 117]. p. 170.
Roberts v. Harnden, 2 Cliff. 590. p. 171.

Appeal from the Circuit Court of the United States for the Northern District of Illinois.

The case, which arose in the court below, was fully stated in the opinion of the court.

The specifications and drawings of Fuller's letters patent, as well as those of letters patent to Enoch S. Yentzer, un-

Statement of the case.

der which respondents' device was constructed are as follows :

HENRY W. FULLER, OF BROOKLYN, N. Y., ASSIGN-
OR TO HIMSELF AND ANTHONY W. GOODELL,
OF THE SAME PLACE.

Letters Patent No. 28,633. Dated June 5th, 1860.

The schedule referred to in these Letters Patent and making part
of the same.

To all whom it may concern :

Be it known that I, Henry W. Fuller, of Brooklyn, in the county of Kings, and State of New York, have invented, made and applied to use certain new and useful improvements in "means for marking cloth in sewing machines," which I denominate the "Universal Marker for Plaiting and Tucking," and I do hereby declare that the following is a full, clear and exact description of the construction and operation of the same, reference being had to the annexed drawing making part of this specification wherein :

Fig. 1 is a side elevation showing my apparatus, also the needle arm and pressure foot of a sewing machine; and

Fig. 2 is a plan of the same with the arms removed to show the other parts.

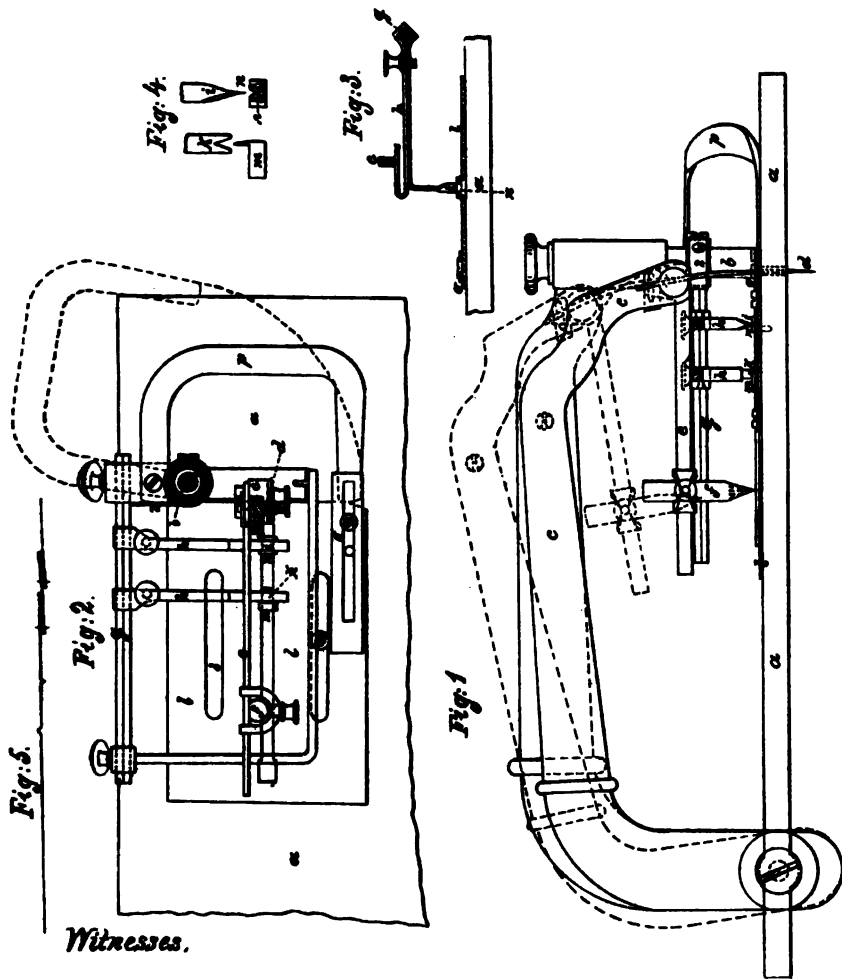
Similar marks of reference denote the same parts.

The nature of my said invention consists in a vibrating marking instrument or instruments, that move in unison with the needle so as to crease or mark the cloth at a given distance or distances from the needle, and the same not pressing on the cloth, except whilst the needle is in the cloth, prevents such marking instrument obstructing the cloth in its movement by the feed, and hence said mark can be made at any distance from the sewing and the cloth remain smooth. By the use of a point vibrating in unison with

H. W. FULLER.
Sewing-Machine Marker.

No. 28,633.

Patented June 5, 1860.



Witnesses.

Inventor.
Henry W. Fuller

Statement of the case.

the needle, and acting on the upper surface of the cloth in connection with a notch or an elastic surface or pad below the cloth, a crease will be made whose ridge is below the cloth, and by the use of a point below the cloth, and a vibrating notch or elastic pad above, a crease will be formed whose ridge is on the upper side of the cloth, and by the use of one, two, or more of these up or down markers, or one up and one down marker, the crease or ridge can be made exactly at the desired distance from the line of sewing and either upwards or downwards according to the way in which the cloth is to be folded over for the after operations; and on performing another line of sewing the crease or creases are made for the next fold. This device is especially useful in all kinds of tucking, and in plaiting shirt bosoms and similar work. By the use of a vibrating pencil or chalk a line of marks is made by which a second line of stitching is guided, the same being useful in quilting or performing any straight or curved parallel lines of stitching. It will be evident that if the marking points are at right angles to the feed from the needle, the marking must be a given distance from the sewing and parallel thereto, regardless of the curved or zig-zag form in which the sewing is performed..

In the drawing *a* represents the bed of any sewing machine; *b* is the pressure foot, and *c* the needle bar or arm, all of which may be of any form, and the sewing is to be performed by the needle *d*, in connection with a shuttle looper or any device.

e is an arm extending from the needle arm or bar, and vibrating with the same; *f* is a pencil, chalk, or point adjusted on said arm *e*, so that in its vibrations, the point shall press upon the cloth and consequently make a mark thereon at the distance from and parallel to the line of sewing being performed at which the second row of sewing is to be made; this is specially adapted to marking for quilting or stitching; *g* is a bar that may be attached to the pressure foot so as to be raised up with it, or may be sustained in any other convenient manner; *h*, *h*, are adjustable marking

Statement of the case.

arms that extend from the bar *g* and are provided one with a marking point *i*, and the other with a marking notch *k*. The arms *h*, are formed as springs so that the parts *i* and *k* are raised from the surface of the cloth except when acted on by the arm *e*, and said arms *h*, are also fitted with springs taking the arm *e*, so as to yield in case of inequality in the thickness of cloth, and not interfere with the full stroke of the needle bar. *l*, is a plate screwed onto the bed *a*, and carrying the adjustable point *m*, and leather *n*, or its equivalent. The point *m*, is formed somewhat similar to the point *i*, both being thin, rounded and blunt chisel forms, so as not to injure or catch in the cloth, and this point *m*, may be fitted to slide in a groove for adjusting the same to the desired distance from the needle, or several of these points may be formed or attached permanently on a plate at short distances apart. The leather *n* is also represented as adjustable, and it forms a crease into which the point *i*, acts and said leather may be set into a small metal holder, or it may be formed as a strip of sufficient length to comprise the distance to which the part *i* may be adjusted. The operation of this part is illustrated in Figs. 4 and 5, where the marking parts *i*, *n* and *k*, *m*, are shown in larger size, and the folder crease produced in the cloth is also represented. The points *i*, *n*, produce a downward crease, and the parts *k*, *m*, an upward crease when the cloth is exposed to the action of these parts by passing between the same; and in order to give motion to these markers the bar or arm *e* strikes on the spring part of the arms *h*, *h*, see Fig. 3, pressing the surfaces together and crimping or creasing the cloth.

The drawing represents my apparatus as adapted for stitching three-ply shirt bosoms as seen in fig. 5, in which instance the plait folded under the cloth runs against the end of the plate *l*, as a guide and the adjustable spring finger, *o*, pressing on the plait keeps it folded down tightly ready to pass under the pressure foot *b*. *p* is a swinging guide attached by the screw 1, to the arm carrying the bar *g*, and acted on by the spring 2, to keep the end of the guide within

Statement of the case.

the plait and the back of the plait against the end of the plate *l*, so that the stitching will be upon the edge of the plait with unerring certainty.

For tucking, the markers should extend on the other side of the needle arm, and for this purpose the bar *g*, can be fitted in any convenient manner, but where a holder or arm to the pressure foot is used, in the manner shown, the hole into which said bar sets may pass through the same, and be provided with a clamping screw so that said bar *g* can be inserted from the other side, and the plate *l*, also stand on the other side of the needle, a second slot, 3, being provided for this purpose. The arm *e*, also requires to be changed to the other side in order to take the marking points *i*, *n*.

It will be evident that the marking notch or point *i*, or *k*, or both, might be placed directly on the arm *e*, and provided with a suitable spring between the bar and point. The manner of attaching the parts to the sewing machine must also be varied as circumstances may require for different characters of sewing machines, or for different kinds of work to be performed. And the vibrating motion may be given to the markers by any other device beside the needle bar.

I do not claim a gauge for spacing off the width of folds, tucks or plaits, either in a sewing machine or applied as a separate apparatus for said purpose, but all the previous devices with which I am acquainted acted simply to perforate the goods or form a mark at a given point to which the goods had to be folded by hand, whereas, my apparatus makes a complete crease in the cloth so that the parts of the cloth when laid over each other, fold down at these creases without requiring creasing by hand as a separate and prerequisite operation.

What I claim and desire to secure by letters patent, is forming one, two, or more creases in cloth by means of markers on opposite sides of the cloth, one of which is connected with the bed of the machine, and the other operates simultaneously with vibrations of the needle in a sewing machine, whereby the crease or creases are formed in the

Statement of the case.

cloth itself parallel to the line of sewing in such a manner that the cloth is ready for doubling over at said creases for the next line of sewing set forth.

I also claim marking a line on the surface of cloth or other material being sewed in a machine, by means of a pencil or similar article that is pressed upon the surface of said cloth at the time the needle perforates the same and is raised therefrom when the feed takes place, so as to produce a series of marks parallel to, and simultaneous with the line of sewing as set forth.

In witness, whereof, I have hereunto set my signature this twenty-fifth day of February, 1860.

HENRY W. FULLER.

Witnesses:

LEMUEL W. SERRELL,

THOS. GEO. HAROLD.

ENOCH S. YENTZER, OF OTTAWA, ILLINOIS.

IMPROVEMENT IN ATTACHMENTS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 113,610, dated April 11, 1871.

To all whom it may concern:

Be it known that I, Enoch S. Yentzer, of Ottawa, in the county of La Salle and State of Illinois, have invented a new and Improved Sewing-Machine Attachment; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Fig. 1, Plate 1, is a perspective view of my improved tucking attachment and pricking-marker. Figs. 2 and 3, Plate 1, are perspective views of two attachments, both showing hemming, tucking, and pricking markers. Fig. 4,

Sheet 1. 2 Sheets.

E. S. Ventzer,
Sewing Machine.
No 113610 *Patented April 11, 1871.*

Fig. 1.

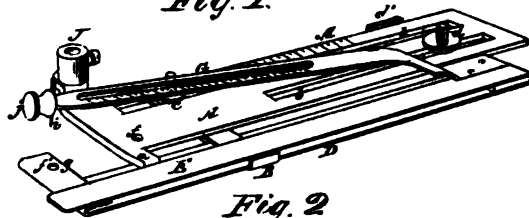


Fig. 2.

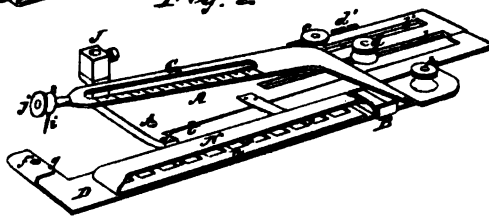


Fig. 3.

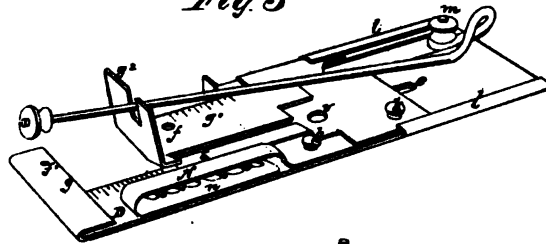
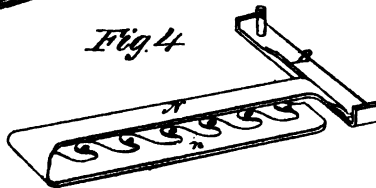


Fig. 4.



Witnesses
R. E. Campbell
J. N. Campbell

Inventor
E. S. Ventzer
Attest: Geo. W. H. H. H. H.

Sheet 2. Sheets.

E. S. Yentzer
Sewing Machine.

No. 113610.

Patented April 11, 1871.

Fig. 5

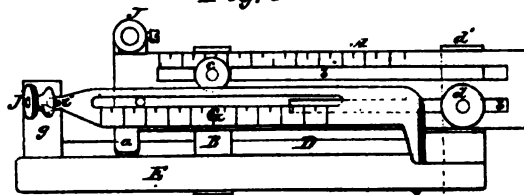


Fig. 6

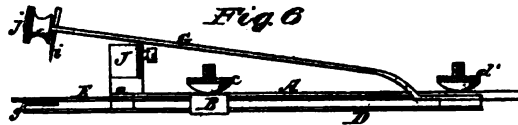


Fig. 7

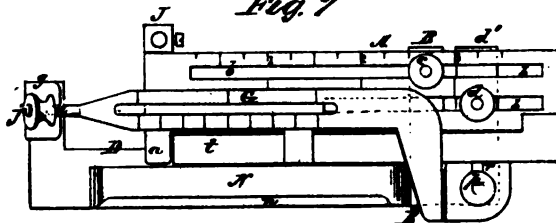


Fig. 8

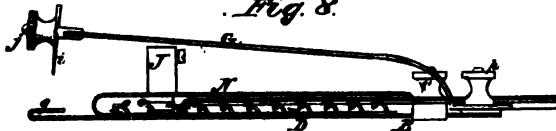
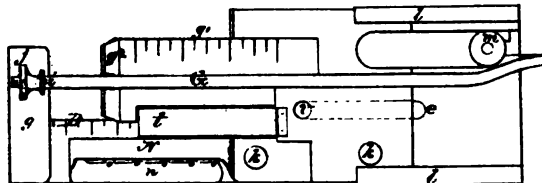


Fig. 9



Witnesses
J. T. Humphrey
J. R. Campbell

Inventor
E. S. Yentzer
Mason, Leitch & Son

Statement of the case.

Plate 1, is a perspective view of a spring pressure-plate, guide, and hemming device, such as is represented is Figs. 2 and 3. Fig. 5, Plate 2, is a top view of Fig. 1. Fig. 6, Plate 2, is a front view of Fig. 1. Fig. 7, Plate 2, is a top view of Fig. 2. Fig. 8, Plate 2, is a front view of Fig. 3.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates, first, to a device which is adapted for being fastened either directly to the cloth-plate of a sewing-machine or to the pressure-bar of such a machine, and which is intended for guiding the cloth and definitely marking off the widths of tucks during the operation of tucking or plaiting, so that tucks or plaits may be conveniently made at regular distances apart, of uniform widths, and parallel to one another; and it relates also to a combination of a hemming device with a part of the device which is used in tucking, whereby the advantages of a tucking, hemming, and pricking marker are combined in one instrument.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings, Figs. 1, 5, and 6, A represents the main plate or frame of the device, which is constructed with oblong parallel slots *b b* through it; also, with a transversely-curved portion, *a*, beneath which the cloth passes to and from the needle; also, with a needle-hole, *f*, through it, and also with an elevated socket, J, which latter is adapted to receive the lower end of the pressure-bar of a sewing-machine, when it is desired to fasten the device to such bar instead of to the cloth-plate of such machine.

Transversely across the bottom of the slotted plate A extends a cloth-guide, B, which is secured in place by a thumb-nut, *c*, the stem of which passes from below upward through one of the slots *b*. The ends of the guide B are turned up to prevent it from being turned obliquely.

In front of the slotted plate A, and lying parallel thereto

Statement of the case.

and beneath the upturned lip *a*, is a thin strip, D, which is secured by means of a set-screw, *d*, and a transverse extension, *d'*, to the slotted plate A farthest from the vertical needle-hole *f*. The free end of the strip D is turned over at *g*, and the upper portion thereof is perforated at *f'* for receiving through it a pointed marker, *i*, hereinafter explained. The lower portion of plate D, just beneath the perforation *f'*, being some distance below the upper portion, *g*, there will be a space between it and said portion, and therefore the pointed piercing-marker, although adjusted to penetrate through the cloth, will not come in contact with the lower portion of strip D nor strike the bed-plate of the machine during the operation of tucking and marking the cloth. This strip or spring D is of great importance in hemming, and serves to keep the cloth up to the turner, and does not allow it to slip out of the turner. A thin strip, E, of spring metal is secured to that end of the strip D in front of the set-screw *d*, and lies in front of slotted plate A and over the said strip D. There is a space between the strips D and E, and also a space between the strip E and plate A, as shown in the drawings.

The pricking-marker *i* is confined by a set-screw, *j*, to the free end of a spring overhanging arm G, which is permanently secured to the cross-piece *d'* in front of the thumb-nut *d*. This arm G may be slotted, as shown in Figs. 1, 2, 5, and 7, so that the needle on the needle-bar of the sewing-machine can play freely through it; or the arm may be made narrow, as in Figs. 3 and 9, and the sewing-needle play on one side of it.

During the operation of tucking or plaiting with the device above described the cloth, properly folded, is fed beneath the spring smoothing-strip E, over the strip D, and beneath the slotted plate A. The folded edge of the cloth is guided straight by the transverse strip B, which can be adjusted toward or from the needle-hole *f*, according to the width of tuck required. At each descent of the needle-bar of the sewing-machine this bar strikes and depresses the

Statement of the case.

arm *G* and causes its point *i* to penetrate the cloth, and thus make a positive mark. The pricking-arm and the strips *D E* are adjustable in order to adapt the instrument to tucks of different widths.

The instrument above described is not designed for hemming, but may be modified as follows, so as to both tuck and hem: Take away the strip *E* and substitute the combined tucking and hemming strip *N n o*, and attach the same to the bar or shouldered guide portion *B*, as represented in Figs. 2, 3, 7, 8, and 9. Next apply a turner, *t*, that corresponds with the turner described in my Letters Patent No. 96,180. This turner may be permanently secured to the front edge of the plate *A*, as shown in Figs. 2, 7, and 8, with its turning-hook *s* in close relation to the turned-up portion *a*, or this turner may be made adjustable, as shown in Figs. 3 and 9.

The combined tucking and hemming strip *N n o* occupies the same place and serves the same office as the strip *E* in the operation of tucking, and it also serves as an auxiliary to the turner *t* in the operation of hemming. This device consists of a thin strip of metal bent, as shown in the drawings, so to form a bottom piece, *n*, from which rises a number of lapping lips, *o*, and a top piece, *N*, lying directly over these lips and serving to keep the cloth down in place while hemming. The lapping lips *o* are curved in a direction opposite to the hook *s* of the turner *t*, and any one of the lips, when properly adjusted with respect to the hook *s*, will operate precisely as described for the lapping lip in my Letters Patent No. 96,180. The tongue or strip *n*, from which the lapping lips rise, serves the same purpose as described for the smoothing-strip *E* during the operation of the tucking when the work is fed up to the needle beneath said tongue. It will be observed that the lapping lips *o o* are turned up from a horizontal strip which has previously been slitted or notched on its inner edge, and that their upper broad bearing-surfaces are in a plane parallel with the bearing surface of the tongue *n*. It will also be observed

Statement of the case.

that the tongue *n* extends nearly to the guide bar or shoulder B, and that the entrance for the material under the plate N of the strip is between said bar and the end of the tongue. This combined tucking and hemming device N *n* *o* may be secured to an adjustable guide, B, as shown, Figs. 2, 4, 7, and 8, and adjusted by loosening the thumb-nut *c*; or said device may be formed on an adjustable slide that is held beneath lips *l l*, together with the plate on which the turner *t* is formed, as shown in Figs. 3 and 9.

The instrument represented by Fig. 9 is adapted for being secured upon the cloth-plate of a sewing-machine, and for this purpose the hole *v* and oblong slot *e* are made to receive through them the confining-screw. The arm G in Fig. 7 is removable, and is held fast when in place by a thumb-nut, *m*. The follower *g'* in Fig. 9 corresponds to the follower described in my Letters Patent above referred to, with this exception, that a part, *g'*, of this follower *g'* is turned up and slotted to serve as a guide for the arm G.

It will be seen from the above description that during the operation of tucking or plaiting the work is marked off for each succeeding tuck while stitching the tucks, and that the marks are produced by a pointed instrument which penetrates the work at each descent of the sewing-needle. The marks or lines thus made are better defined than a mere crease, and will not be obliterated by handling the work.

It will also be seen that by employing a removable pricking-arm and an adjustable device, N *n*, in combination with a turning device, I have a combined tucker and hemmer.

The advantage attending the attachment of the instrument to the pressure-bar of a sewing-machine is that when the lower thread runs out or breaks, so that it is necessary to take out the shuttle, this can be done without removing the instrument. In this way the difficulty and loss of time of readjusting are avoided.

The strip D, above described, over which the cloth passes on its way to the needle, serves as a support for the cloth and keeps it up in position while feeding.

Argument of counsel.

Having described my invention, what I claim is—

1. The spring-arm G, furnished with the piercing-marker *t*, and constructed, as described, so as to be operated by the descending motion of a sewing-machine needle, in combination with the adjustable guide B, cloth supporting and adjusting spring strip or plate D, smoothing-strip E, (or its equivalent N *n o*.) and plate A *a*, substantially in the manner and for the purpose described.

2. The tuck-marker consisting of the strip D, bent at *g* and perforated at *f*, and the pricking-marker *i* on the arm G, all connected together and forming an attachment, substantially as described.

3. The strip N, formed with turned-up lapping lips *o o*, and extended from the guide-bar, or from an adjustable guide-shoulder, B, a suitable distance, and carried back to within a short distance of said shoulder, so as to form a tongue, all substantially in the manner and for the purpose described.

4. The combination of the hemming and tucking devices in one implement, substantially in the manner described.

ENOCH S. YENTZER.

Witnesses:

JACOB SAROMAN,

GEO. W. WARD.

(The patent No. 127,287, Enoch S. Yentzer, May 28, 1872, referred to in this case will be found in Fuller v. Yentzer, p. 176 *post*.)

Messrs. Edward N. Dickerson, E. B. Barnum, and C. C. Bonney, for appellants:

The court erred in its construction of this patent.

The court, after holding that, "all that Fuller invented was the application of the *notch* and *blade*, the *spring* and the various other parts of the mechanism to the sewing machine," says that, "all that he can claim, and, I think, all that his patent properly construed, can be considered to cover, is the particular device which he adapted in its ap-

Argument of counsel.

plication to bed-plate of the sewing machine and to the needle-bar."

If, as it is believed, the court intended to hold that the inventor should be confined to his specific mechanism in form, shape and substance, it is insisted that the court erred.

This invention was a pioneer and a new departure in the art of sewing by machinery; was exceedingly useful and very valuable and was fully entitled to a liberal construction.

Pioneer inventions are generally crude and once made, improvements are rapidly suggested, but in this case every mechanical part of Fuller's invention as applied to tucking is found in the tuck creaser of to-day, the only great advance made being the assembling of the parts, to make the device a unit in adjustment.

His invention was then complete and mere changes in the operating mechanism could not affect it, and although the mechanism he pointed out, has since been universally used, however much it may be to his credit it ought not and cannot limit his claims.

The court erred in holding that the appellees did not infringe.

Upon the construction limiting the claim to substantially the process, form and parts of the operating mechanism the appellees were clearly covered by it. A mere inspection of the appellees' exhibits shows the existence of each and every of these parts.

Unless the court held that the mere form of adjustment was essential, a view the inventor expressly disclaims, the appellees' devices are identical in form as well as mechanical functions.

Messrs. Walter B. Scates and H. C. Whitney, for appellees :

(This case and the two following, *Fuller v. Yentzer*, *Fuller v. Goodrich*, 94 U. S. 299, p. 176, *post*, were argued together.)

Argument of counsel.

In the discussions of the questions of law—and of fact, that may arise and be presented in these three cases—I shall group them together, because the bills are predicated of an alleged invention by Fuller himself in one—and by Israel M. Rose for which a patent issued to James Wilcox, September 22, 1863—and which being surrendered—was reissued to complainant December 1, 1868, upon amended specifications and claims;—and they allege infringements, by the respective appellees, by the manufacture and sale of tuckers for sewing machines, substantially similar to, and embodying the invention and improvement described and specified in appellants' own patent, and Rose's reissued patents. These allegations are denied, involving the question of substantial similarity in chief—though other questions of law, and of fact, are essential to its elucidation and solution.

It is of primary importance first, to ascertain and settle by construction of appellants' patents, what is the nature, extent and character of the invention, or of the improvement or device covered, secured and protected. And as to these, the counsel may differ, and the court must settle the difference. I deem it of importance to refer to settled principles of law as to what is not patentable—and some other distinctions.

A principle is not patentable, 14 How. 156; 22 How. 132; 15 How. 62; 1 Wall. 320; 20 How. 378; and others referred to in Bright's Fed. Dig. 609, sec. 15.

Any power is not patentable. See same cases as above.

End or result is not patentable but only the means of producing it. *Burr v. Cowperthwait*, 2 Bl. C. C. R.; *Sickley v. Falls Co.*, 2 Fish. 202; *Case v. Brown*, 2 Fish. 268; *Sangster v. Miller*, 2 Fish. 563.

Where a person has discovered a result, as well as the machinery which produces it—he may invoke the doctrine of *equivalents*; but if he be only the inventor of a *device*, he cannot invoke the doctrine of *equivalents* in reference to infringers.

Argument of counsel.

Singer v. Walmsley, 1 Fish. 558; Goodyear v. Central R. R., 2 Fish. 626.

A discovery of an effect is not patentable. Morton v. N. Y. Eye Infirmary, 2 Fish. 320.

The process is patentable, and may cover the discovery of a result, or effect by chemical action by the operation or application of some element or power of nature, or of one substance to another.

Corning v. Burden, 15 How. 252 [6 Am. & Eng. 69]; Howe v. Abbott, 2 Story, 190.

A patent for a *combination*, cannot be supported by evidence of novelty of *one* of its *parts*.

Batton v. Clayton, 2 Whart. Dig. 408; Bright's Fed. Dig. 611, sec. 65.

A *combination* to be patentable, must *effect a new result* or an *old result* by a *new mode of action*; there must be *novelty* even of *product* or *process*. A *combination* is an *entirety*; if *one* of the elements claimed be *given up* a patentee has no valid *claim* to the residue.

Vance v. Campbell, 1 Black, 427 [7 Am. & Eng. 117].

A patent for a combination of three or more distinct things, is not infringed by combining two of them with a third, which is substantially different from the other element described in the specification.

Prouty v. Ruggles, 16 Pet. 336 [4 Am. & Eng. 351], and many others referred to in Bright's Dig. 612, sec. 83.

To constitute an infringement of a patent of a *combination*, the defendant must have used the *same combination*, constructed and operated *substantially* in the *same way*.

Graham v. Mixer, 1 Am. Law J. 539.

Where a patent is granted for a combination of mechanical devices, none of which are an original invention—the use of a *part only* of the *combination* is no infringement.

McCormick v. Talcott, 20 How. 402 [6 Am. & Eng. 410]; Barrett v. Hall, 1 Mas. 447; Pitts v. Wemple, 6 McLean, 558; Evans v. Eaton. 1 Pet. C. C. 323; see Lee v. Blandy, 2 Fish. 89.

Argument of counsel.

A patent does not protect a claim not embraced in the specification—nor can the patentee claim that his invention is different or more enlarged than is set forth in his specification.

Booth v. Gavelly, 1 Blatch. 247; Rich v. Lippincott, 2 Fish. 1.

The fundamental error of complainants seems to be: First, that their *claim* does not embrace a claim for mechanism at all; but for a principle or a result. Second, that in defining their claim, they are compelled to try to stop all persons from infringing on that particular result.

“A patent cannot be sustained for an effect produced distinct from the process or machinery necessary to produce it.”

Abbott's U. S. Practice, 502.

Also, “the inventor cannot treat another as an infringer who has improved the original machine by using a different form or combination performing the same function.”

McCormick v. Talcott, 20 How. 405 [6 Am. & Eng. 410].

The remaining and most important question is, does Yentzer's device infringe that portion of Fuller's device which is a valid patent: *i. e.* valid, both within the invention, and also the *claim*. And in view of what I have heretofore urged, I shall treat the invention of Fuller as a combination of old devices, operated by an old power to produce a given result. Such, I consider to be the true scope of Fuller's patent. The law which is applicable to such cases is thus stated in various ways. “Where the patent on which the plaintiff claims was issued for a new combination of old parts the rule requires him to show that the defendant has used all the elements of his combination; as the combination is the source of the thing patented, if the defendant has used some of the parts only, omitting one or more, he has not used the combination. There is no infringement.”

Abbott's U. S. Practice Cases.

If the three elements are the same, but are not connected and arranged the same, it is no infringement; or if there are

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two of the three elements, and the third element is not new, it is not the same combination; it is not the same combination if it is substantially different from it in any of its parts.

Singer v. Walmsley, 1 Fish. 573; *Dodge v. Card*, 2 Fish. 119; *Latta v. Shawk*, 1 Fish. 470; *Lee v. Blandy*, 2 Fish. 93.

What Fuller has done is, the forming of a *combination* of his own, of old and well known devices not patentable. Had he been content to describe these several devices, or his change in their forms as entering into and forming parts of his combination and its application and have contented himself by a claim only for this *combination* his patent and claim would not be void.

Upon as full an examination as I have been able to make I have arrived at the conclusion that complainant's patent is void, for reasons and views suggested, and others that may be.

While courts will give a liberal construction of a patent, favorable to the patentee, it must not be so liberal as to permit the inventor to couch his specification and claims, in such ambiguous terms, that its claims may be expanded or contracted to suit the exigency. *Parker v. Sears*, 1 Fish. 93; *Detmold v. Reeves*, 1 Fish. 127. And patents are to be construed with reference to the state of the art, at the time of invention. *Pitts v. Wemple*, 2 Fish. 10.

But not to cover or retain to the inventor anything in common use, or a matter of common right—but only what he has himself created. *Winans v. Denmead*, 15 How. 330 [6 Am. & Eng. 107]; *Ames v. Howard*, 1 Sumn. 482; *Ryan v. Goodwin*, 3 Sumn. 514; *Davoll v. Brown*, 1 Wood. & M. 53.

The construction and interpretation of the specification and claims are for the court to make.

Mr. Justice CLIFFORD delivered the opinion of the court:

Patents for a machine will not be sustained if the claim

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is for a result, the established rule being that the invention, if any, within the meaning of the Patent Act, consists in the means or apparatus by which the result is obtained, and not merely in the mode of operation, independent of the mechanical devices employed; nor will a patent be held valid for a principle or for an idea, or any other mere abstraction. *Burr v. Duryee*, 1 Wall. 531 [7 Am. & Eng. 224].

Where the claim immediately follows the description of the invention, it may be construed in connection with the explanations given in the description; and, if the claim contains words referring back to the specification, it cannot properly be construed in any other way. *Seymour v. Osborne*, 11 Wall. 516 [8 Am. & Eng. 290].

Improvements in mechanism for marking cloth in a sewing-machine, it is alleged in the bill of complaint, were invented and patented by the complainant, and he charges that the respondents have infringed the exclusive privilege secured to him by the letters patent, and he prays that they may be decreed to account for the gains and profits which they have made by the infringement, and for an injunction. Process was served; and the respondents appeared and filed an answer, setting up several defenses, two of which it will be important to examine in disposing of the case: (1) That the complainants are not the original and first inventors of the patented improvement. (2) That the respondents have never infringed the complainant's patent, as alleged in the bill of complaint.

Before describing the nature of his invention, the patentee refers to figure 1 of the drawings, as showing the main features of the patented improvement when arranged in a sewing-machine for the purpose of accomplishing the results described in the specification, and he proceeds to state that the invention consists in a vibrating marking instrument, which moves in unison with the needle of the sewing-machine, so as to crease the cloth at given distances from the needle, the marking instrument not pressing on the cloth

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except while the needle is in the cloth, which prevents the cloth from being obstructed in the movement by the feed, and allows the marking to be made at any distance from the sewing without wrinkling the even surface of the cloth.

By the use of a point vibrating in unison with the needle, and acting on the upper surface of the cloth in connection with a notch or an elastic surface or pad below the cloth, a crease will be made whose ridge is below the cloth; and by the use of one, two, or more of these up or down markers, or one up and one down marker, the crease or ridge can be made exactly at the required distance from the line of sewing, and either upward or downward, according to the way in which the cloth is to be folded for the subsequent operations.

Where more than one line of sewing is required, the crease or creases for the next fold are made in the same way; and the patentee states that the device is especially useful in all kinds of tucking and in plaiting shirt bosoms and other similar work, and he represents that, by the use of a vibrating pencil or chalk, a line of marks may be made by which a second line of stitching may be guided, which will become useful in quilting, or in performing any straight, curved or parallel lines of stitching. Superadded to that, he also represents that if the marking points are at right angles to the feed, from the needle, the marking will be at a given distance from the sewing and parallel thereto, regardless of the curved or zigzag form in which the sewing is performed.

Sufficient appears in the preceding description of the invention and of the principal devices of which it is composed, including the arrangement of the same and their mode of operation, to render it unnecessary to reproduce the minute references in the specifications to the representations exhibited in the different figures of the drawings.

Throughout the description it is apparent that the patented apparatus is to be attached to an organized sewing-

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machine ; and the patentee states that the manner of effecting the attachment must be varied as circumstances may require, in view of the structure of the particular sewing-machine and the kind of work to be performed, and he adds that the vibrating motion may be given to the marker by the needle-bar or any other suitable device. Gauges, it seems, are employed for spacing off the width of the folds, tucks or plaits ; but the patentee states that he does not claim those devices, though he is of the opinion that the devices which he employs work better than any he has before known.

1. What he claims is the forming one, two or more creases in cloth by means of markers on opposite sides of the cloth, one of which is connected with the bed of the machine, and the other operates simultaneously with the vibrations of the needle in a sewing-machine, whereby the crease or creases are formed in the cloth itself, parallel to the line of sewing, in such a manner that the cloth is ready for doubling over at the creases for the next line of sewing.

2. He also claims marking a line on the surface of cloth or other material sewed in a sewing machine, by means of a pencil or similar article pressed upon the surface of the cloth at the time the needle perforates the same, and is raised therefrom when the feed takes place, so as to produce a series of marks parallel to and simultaneous with the line of sewing.

Concede that a result is not patentable, which is clearly shown to be true by the preceding remarks, and two things follow as a necessary consequence : (1) That the invention described in the first claim is merely the described apparatus for forming one, two or more creases in cloth by means of markers on opposite sides of the cloth, for the purpose and in the manner and by the means therein described, it being clearly understood that the patentee does not claim the described means of attaching the patented apparatus to a sewing machine. (2) That the invention described in the

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second claim is merely the described apparatus for marking a line on the surface of cloth or other material sewed on a sewing machine, by means of a pencil or similar article pressed upon the surface of the cloth at the time the needle perforates the same, for the purpose and in the manner and by the means described, excluding the means by which the patented apparatus is attached to a sewing-machine.

Special reference is made to the principal features of a sewing-machine; but inasmuch as the apparatus may be attached to any such machine, it is not deemed necessary to enter into those details, especially as the patentee states to the effect that the sewing is to be performed by the needle of the machine to which the apparatus is attached, in connection with a shuttle, looper or other similar device.

Particular mention is made of the operative devices of the patented apparatus for marking lines parallel to the line of sewing and for forming the creases in the cloth, as shown in the drawings. Briefly stated, those devices are as follows: (1) An arm extending from the needle-arm or bar, and vibrating with the same. (2) A pencil, chalk or point adjusted on the arm of the apparatus so that in its vibrations the point shall press upon the cloth and make a mark thereon for the second line of stitches at the required distance from the line of sewing and parallel to the same. (3) Both the specification and the drawings also show a bar which, as the patentee states, may be attached to the presser-foot, so as to be raised up with it, or that it may be sustained in any other convenient manner. (4) Adjustable marking-arms are also shown, which extend from the bar of the apparatus, and which are provided, one with a marking point, and the other with a marking-notch. Arms formed as springs are also provided, so that the marking-point and the marking-notch are raised from the cloth, except when acted on by the arm of the apparatus. Springs are also used in connection with the adjustable marking-arms, so as to yield in case of inequality in the thickness of

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cloth, and not to interfere with the full stroke of the needle-bar.

Enough appears to show that the apparatus is attached to the bed of a sewing-machine, to which a plate is screwed which carries another adjustable marking-point, formed somewhat similar to the marking-point previously described, and the device or its equivalent employed to regulate the distance of the second line from the one being sewed.

Two marking points are particularly described ; and the representation is that they are both made thin, round, blunt and chisel-formed, so as not to injure or catch on the cloth, and that the one shown in the third figure of the drawings may be fitted to slide in a groove to render the same adjustable at the desired distance from the needle, or that several such points may be formed or attached permanently at short distances apart.

Speaking of the device to regulate the distance for the second line of sewing, the patentee states that it may be adjustable, and that it will form a crease for the marking-point, and that it may be set in a small metal holder, or it may be constructed of sufficient length to comprise the whole distance to which the marking point may be adjusted.

Three marking points and the notch are mentioned in the specification ; and the statement is, that the one first mentioned and the device employed to regulate the distance for the second line produce a downward crease, and that the notch and the other marking point shown in the third figure of the drawings produce an upward crease when the cloth is exposed to the action of these parts by passing between the same.

In order to give motion to these markers, the bar or arm of the apparatus strikes on the spring part of the adjustable marking-arms, which extend from the bar attached to the presser-foot, pressing the surfaces together, and cramping or creasing the cloth.

For tucking, the markers should extend on the other side

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of the needle arm, and for that purpose the bar attached to the presser-foot of the sewing machine may be fitted in any convenient manner; but where a holder or arm to the presser-foot is used in the manner shown, the hole into which the bar sets may pass through the same and be provided with a clamping-screw, so that the bar attached to the presser-foot can be inserted from the other side, and in that case the plate also should stand on the other side of the needle, a second slot being provided for the purpose. Change to the other side must also be made in the arm of the apparatus, extending from the needle-arm of the sewing machine to the marking-point first described and the device to regulate the distance for the second line of stitching.

Corresponding variations must be made in the manner of attaching the apparatus to the sewing-machine, and the patentee states that the vibrating motion may be given to the markers by the needle bar, or by any other suitable device.

Proofs were taken, the parties heard and the Circuit Court entered a decree dismissing the bill of complaint, and the complainants appealed to this court.

Want of novelty in the supposed invention, and the denial of infringement by the respondents, constitute the two defences set up in the answer; but the evidence to overcome the *prima facie* presumption that the patentee is the original and first inventor being insufficient for the purpose, the first defence must be overruled. *Cammeyer v. Newton*, 4 Otto, 225 [p. 98 *ante*].

Grant that, and it follows that the decision in the case before the court must depend upon the question of infringement. Without more, the remarks already made are sufficient to show that the patented improvement is a combination of old elements constituting an apparatus for effecting the results described in the specification.

Intentional infringement is alleged by the complainants, and the burden is upon them to prove the allegation, as the charge imputes a wrongful act to the respondents.

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Where the invention is embodied in a machine, the question of infringement is best determined by a comparison of the machine or apparatus constructed or used by the respondent with the mechanism described in the specification of complainant's patent. Comparison of the kind has been carefully made by the court in the case under consideration, aided by the expert evidence exhibited in the record ; and the court is of the opinion that the invention of the complainant, when the patent is properly construed, is not embodied in the apparatus constructed, sold or used by the respondents, as charged in the bill of complaint.

Two distinct devices are shown in the complainants' patent which operate upon the cloth when being sewed in a sewing-machine, so as by the one to leave a mark, and by the other to make a crease in the cloth to indicate where it should be folded for the future operation. Briefly described, one of the devices consists of a pencil arranged as before explained, and the other consists of the notch and the point fitting into it, called the markers, and placed on opposite sides of the cloth, and which are operated by the needle-arm, and so arranged in their connections as to vibrate in unison with the needle to press the cloth in the notch while the needle is in the cloth, thereby forming a crease in the same parallel to the line of sewing, for the purpose of indicating the place for the next fold.

Creases of the kind are made by the point and notch, but the pencil is employed to make a mark on the cloth when the cloth is moved under it, as a guide for folding the cloth, as before sufficiently explained. No such device as the pencil or its equivalent is found in the respondents' apparatus, nor anything which will perform the same function, or which has or can be made to have the same mode of operation. Nothing of the kind is exhibited in their apparatus, nor is anything of the kind described in the patent under which they profess to work, nor are there any means or mechanism exhibited or described whereby such a device can be employed

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in the apparatus or be made to operate to mark the cloth in any manner so that the same could be evenly folded.

In the complainants' apparatus the pencil is fastened to a bar which projects out from the needle-arm in nearly a horizontal direction, entirely unlike anything shown in the respondents' apparatus. Projecting outward from the presser-foot, and fastened to it, is a substantial frame-piece, called a bridge by one of the witnesses, which supports a bar running parallel with the bed of the machine and nearly parallel with the needle-arm, which supports one or more spring-arms, the same being provided with two slides or markers; one being a point operating in an elastic bed fastened to the plate of the marker, and the other being a point or sharp device fastened to the bed-plate and operating on an elastic bed attached to one of the described spring-arms. Attached to the needle-bar is the arm which supports the pencil, and in the downward movement of the bar it comes in contact with the spring-arms and causes the described points to mark the cloth.

Viewed in the light of these suggestions, it is clear that the distinct features of the invention consist in the elevated bar projecting out of the frame attached to the presser-foot, the described spring arm, the bar projecting out from the needle-arm with the described points, and the bed-plate on which they strike.

Turn from that to the patent of the respondents, or to the apparatus which they make, use and sell, and it appears, beyond all doubt, that the apparatus of the respondents is substantially different in many respects from the patented improvement of the complainants. There is no framework in the respondents' apparatus, projecting out from the presser-foot, nor any horizontal bar projecting out from the framework; nor are there any spring-arms attached to any horizontal bar; nor is there any horizontal bar projecting out from the needle-arm to operate any such spring-arms as those described in the complainants' specification.

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Instead of that there is, in the apparatus of the respondents, a pivoted double-spring blade operating on both sides of an upwardly projecting point. Effective means for operating that blade are also shown, and it appears that they consist in a spring-arm attached to the bed-plate of the marker which extends over the double blade, and that a vertical slot is made in the spring-arm through which the needle passes, and allows the lower end of the needle-arm to force the spring down onto the double blade while the cloth passes under the blade and over the sharp point, by which the elasticity of that portion of the cloth is lessened so that it will readily bend to form a tuck at the marked place.

Other differences are also apparent; as, for example, the spring-arm in the apparatus of the respondents, is not attached to the double blade or marker, nor is the double blade attached to any horizontal bar projecting out from the presser-foot, as in the apparatus of the complainants.

Without more, the differences suggested are sufficient to warrant the conclusion that the construction and mode of operation employed by the respondents is substantially different from the means and mode of operation described in the specification of the complainants' patent.

Expert witnesses testify that the bar projecting out from the frame attached to the presser-foot, the spring marker-arm, and the bed-plate are all necessary in the apparatus of the complainants to perform the function described in the specification, and the court, without hesitation, concurs in that conclusion; and the witnesses also state that if any one of those devices be omitted the apparatus will be wholly inoperative, except that perhaps one marker instead of two might answer the purpose to some extent, as set forth in the specification.

Beyond doubt, all those devices must co-operate to effect the described result; and it is equally clear that neither those devices nor any of them can be substituted by any de-

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vice in the respondents' patent or apparatus, without reconstruction and invention, nor would anything short of invention enable the constructor to successfully use the devices shown in either apparatus in the other, so as to render the apparatus operative to effect the result described in the complainants' patent. None of the elements of the patented apparatus are new, and it follows that the patent consists in the described apparatus or in the combination of the old elements of which the apparatus is composed.

Valid letters patent undoubtedly may be granted for an invention which consists entirely in a new combination of old elements or ingredients, provided it appears that the new combination of the ingredients produces a new and useful result; but the rule is equally well settled that the invention in such a case consists merely in the new combination, and that a suit for infringement cannot be maintained against a party who constructs or uses a substantially different combination, even though it includes the exact same elements or ingredients, if the combination is, in fact, new and useful, and substantially different from the one which preceded it. *Gill v. Wells*, 22 Wall. 14 [9 Am. & Eng. 471].

Such an invention, if it produces a new and useful result, is the proper subject of a patent, and such a patent is valid and operative; but the right of the patentee under it differs in one respect from those of a patentee for an invention which consists of an entire machine, or of a new and useful device, as the rights of a patentee for a mere combination of old ingredients are not infringed, unless it appears that the alleged infringer made, used, or sold the entire combination. *Gould v. Rees*, 15 Wall. 194 [9 Am. & Eng. 39]; *Prouty v. Ruggles*, 16 Pet. 341 [4 Am. & Eng. 351]; *Vance v. Campbell*, 1 Black, 428 [7 Am. & Eng. 117].

Beyond doubt, that rule is correct; but the mere substitution of another old ingredient for one of the ingredients of a patented invention is not a good defence for an infringer,

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if the substitute performs the same function as the ingredient for which it was substituted, and was well known at the date of the patent as a proper substitute for the omitted ingredient; but the rule is otherwise if the ingredient substituted was a new one, or performed a substantially different function, or was not known at the date of the patent in question as a proper substitute for the one omitted, as in that event the defendant does not infringe. *Roberts v. Harnden*, 2 Cliff. 504.

Substantial differences between the apparatus of the respondents and the patented improvement of the complainants other than those referred to may also be pointed out, which of themselves are quite sufficient to show that the charge of infringement is not established.

By the patent of the respondents, it appears that their apparatus contains an additional device, consisting of a slide-guide, the function of which appears to be to regulate the width of the tuck, the scales being marked on the bed-plate to be used as a guide for that purpose. Plainly no such device is shown in the apparatus of the complainants. Instead of that, they adjust the spring-arms which are on the bar projecting out from the framework or bridge attached to the presser-foot.

When the slide-guide in the respondents' apparatus is moved, the needle-arm still continues to strike the spring-lever or spring-arm on the same place; but when the spring-arms in the complainants' apparatus are moved on the bar projecting out from the frame attached to the presser-foot of the sewing-machine, the bar projecting out from the needle-arm necessarily strikes the spring-arm at another point on the bar, showing that the two devices operate on distinct principles, as they are controlled and regulated by different mechanical means.

Wide differences also exist in the operation of the marking points, when one apparatus is compared with the other. Suitable means for adjusting the marking-point are shown

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in the complainants' patent, but the marking-point in the respondents' apparatus is stationary. In the complainants' apparatus it is adjustable in a slot made in the bed-plate, so that it may be moved longitudinally to correspond with the notches or bearings in the end of the spring-arms when the latter are adjusted, it appearing that one marking point in that apparatus projects up from the bed-plate, and that the other marking point extends down from one of the spring-arms; that the point in the bed-plate operates in a bearing or notch in one of the spring-arms, and that the other spring-arm has a point operating in a bed in the slot made in the bed-plate, which shows that either spring-arm, with its respective marker, may perform the same functions substantially as the other spring-arm.

From these remarks, it follows that the point or bar for marking, in the complainants' apparatus, must necessarily be adjusted in the bed-plate to a distance corresponding to the movement of the spring-arms. Unlike that, the marking point in the respondents' apparatus is stationary, and in that particular is entirely different, as all must admit who have given the matter any examination whatever.

Besides, there is in the patented apparatus a curved or movable plate attached to a horizontal arm or frame-piece fastened to the presser-foot, the function of which plate is the holding of the cloth smooth on the bed-plate as it passes through the apparatus. One end of the movable plate is elevated above the bed of the machine, while the other end is curved, and brought nearly or quite to the bed-plate of the marker, and operates independently of the other mechanism. Compare those means for holding the cloth with the means employed in the apparatus of the respondents, and the difference is at once seen to be material and obvious; as, for example, the bar which holds the cloth to the bed-plate in the latter apparatus is attached to one end of the bed-plate, and extends lengthwise of it, and is rigidly fastened to the marking blade, forming a different combina-

Notes and Citations.

tion from that exhibited in the other apparatus, inasmuch as the bar which holds the cloth to the bed-plate is made to bear harder thereon when the spring-arm is brought down on the blade than when the needle-arm is ascending. Detach the bar from the bed-plate in the respondents' apparatus and no marking can be done, but the marker will continue to perform its function in the complainants' apparatus, even though the smooth plate were detached from the device fastened to the presser-foot.

Differences of equal importance might be continued at much greater length, but the court is of opinion that those already pointed out are amply sufficient to show that the decision of the Circuit Court dismissing the bill of complaint is correct, and that there is no error in the record.

Decree affirmed.

Dissenting, Mr. Justice STRONG, Mr. Chief Justice WAITE, Mr. Justice MILLER and Mr. Justice BRADLEY.

94 U. S. 299.

Notes :

1. Result not patentable:

Carver v. Hyde, 16 Pet. 513 [4 Am. & Eng. 365].

LeRoy v. Tatham, 14 How. 156 [5 Am. & Eng. 313].

Case v. Brown, 2 Wall. 320 [7 Am. & Eng. 360.]

3. Result claims construed to intend "means by which":

Mitchell v. Tilghman, 19 Wall. 287 [9 Am. & Eng. 174];
and see

Corning v. Burden, 15 How. 252 [6 Am. & Eng. 69.]

Notes and Citations.

4. Burden of proving infringement:

Agawam Co. v. Jordan, 7 Wall. 583 [8 Am. & Eng. 24].

Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290].

Mitchell v. Tilghman, 19 Wall. 287 [9 Am. & Eng. 174].

Fuller v. Yentzer, 94 U. S. 299 [p. 176 *post*].

Imhaeuser v. Buerk, 101 U. S. 647.

Price v. Kelly, Bk. 26 L. ed. 634.

Bates v. Coe, 98 U. S. 31.

Patent in suit:

No. 28,633. Fuller, H. W. June 5, 1860. Marking Cloth
for Sewing Machines.

OTHER SUITS ON SAME PATENT :

Fuller v. Goodrich v. Yentzer, 1874. 6 Biss. 203; 1 Ban. & Ard.
520.

Fuller v. Goodrich, 1877. 94 U. S. 299 [p. 176 *post*].

Cited:**IN SUPREME COURT IN :**

Rowell v. Lindsay, 1885. 113 U. S. 97; Bk. 28 L. ed. 906.

Electric Railroad Signal Co. v. Hall Railway Signal Co., 1885.
114 U. S. 87; Bk. 29 L. ed. 96.

Notes and Citations.

IN CIRCUIT COURTS IN :

Henderson v. Cleveland Co-operative Stove Co., May, 1877. 2
Ban. & Ard. 604; 12 O. G. 4.

IN TEXT BOOKS:

Merwin on Pat. Invt. 1883, p. 160.
Walker on Pats. 1883, pp. 130, 252, 264.

Syllabus.

HENRY W. FULLER ET AL., APPELLANTS, v. ENOCH S. YENTZER ET AL. SAME v. HERMAN B. GOODRICH.

94 (4 Otto) U. S. 299-307. Oct. Term, 1876.

[Bk. 24, L. ed. 107; 11 O. G. 597.]

Affirming *Ibid*, 6 Biss. 203, and 94 U. S. 288 [p. 138 ante].

Argued January 12, 15, 16, 1877. Decided March 2, 1877.

Combination. Infringement. Substituted element. Result. Construction of claims. Improvement. Patentability. Burden of proving infringement. Particular patent construed.

1. The infringement of a patent is not avoided by the substitution for one member of the combination of an old ingredient performing the same function, and well known at the date of the patent as a proper substitute for the one omitted. But the rule is otherwise, if the ingredient substituted is a new one, or performs a substantially different function, or was not known at the date of the patent as a proper substitute for the one omitted. (p. 192.)
2. A result is not patentable, and claims nominally for results will, if possible, be construed to be for the apparatus or certain portions thereof, as described in the specification of the patent. (p. 197.)
3. A patent for improvements in an apparatus may be valid if they are new, and accomplish a new and useful result, even though all the elements of the same are old, provided the combination or arrangement of such elements is new and of such a character that it involved invention to construct the same. (p. 198.)
4. Reissued letters patent No. 3,218, I. M. Rose, December 1, 1868 (original patent No. 40,084, September 22, 1863), Marking Cloths in Sewing-Machines, *held* not anticipated by letters patent No. 26,633, H. W. Fuller, June 5, 1860, Marking Cloths in Sewing-Machines, which is for a different invention. (p. 198.)

* See Explanation of Notes, page III.

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5. The burden of proof is upon the complainant to show that the defendant has infringed the patent under which he claims. (p. 198.)
6. A claim in reissued letters patent No. 3,218, December 1, 1868, (original patent No. 40,084, I. M. Rose, September 22, 1863), Marking Cloths in Sewing-Machines, for a "tuck-creasing mechanism, such as described, having its upper and lower parts connected, and together adjustable as to its relations with the needle of a sewing-machine, and operated by the sewing-machine as set forth," *held* not infringed by every form of mechanism by which a creaser is attached or adjusted to a sewing-machine, by which unity of adjustment is accomplished, and is not infringed by apparatus constructed under patent No. 127,287, E. S. Yentzer, May 28, 1872, Tuck Marker. (p. 199.)

Appeals from the Circuit Court of the United States for the Northern District of Illinois.

The appellants filed bills in these cases in the court below, where decrees were entered dismissing the same. Whereupon they appealed to this court.

For the drawings and specifications of Fuller's letters patent No. 28,633, June 5, 1860, see *Fuller v. Yentzer*, 94 U. S. 288, [p.138 *ante*.] The specifications and drawings of Yentzer's letters patent and of the Rose reissue are as follows :

ENOCH S. YENTZER, OF CHICAGO, ILLINOIS.

IMPROVEMENT IN TUCK-MARKERS FOR SEWING-MACHINES.

Specification forming part of Letters Patent No. 127,287, dated May 28, 1872.

To all whom it may concern :

Be it known that I, Enoch S. Yentzer, of Chicago, in the county of Cook and State of Illinois, have invented a Combined Tucker, Hemmer, Seamer, and Edge-Stitcher ; and I

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do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Fig. 1 is a perspective view of the instrument adapted for tucking and marking. Fig. 2 is a perspective view of the hemmer. Figs. 3, 4, 5, 6, and 7 are views in detail of the devices shown by Figs. 1 and 2.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to certain improvements on sewing-machine attachments designed for marking and tucking, and also for felling, seaming, and edge-stitching, as will be hereinafter explained.

The following description of my invention will enable others skilled in the art to fully understand it.

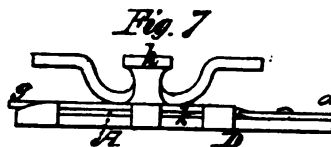
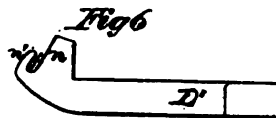
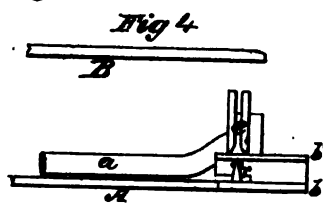
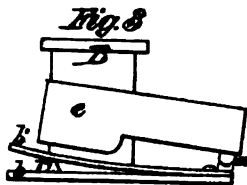
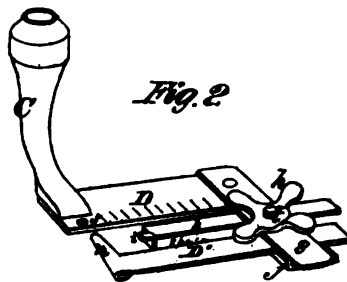
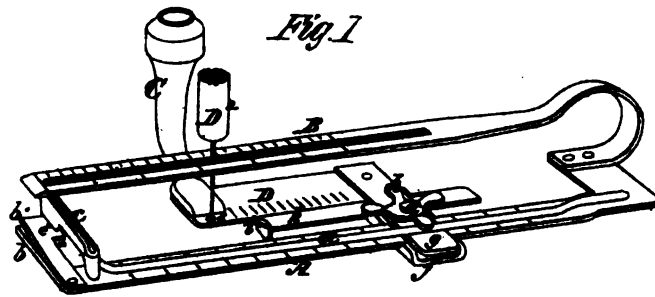
I will first describe the tucker and marker. This consists of a flat gauge-plate, *D*, properly marked off and secured to the pressure-foot *C*, as shown in Figs. 1 and 2. This plate has a right angular extension, *j*, formed on one end, the two side edges of which present lips, which are turned up, and receive between them a clamping-plate, *g*. The plate *g* is secured fast at its rear end upon the plate *D*, and rising through it is a screw, *t*, on which a clamping-button, *h*, is applied. Instead of securing the gauge-plate *D* to the pressure-foot *C*, it may be secured to the cloth-plate of a sewing-machine by means of a screw. In either case the plate *D* will act as a pressure-foot, and keeps the cloth smooth and flat. Between the two plates *j g*, which I term the clamp, the lower arm of a marking-frame, *A B*, is confined, and also a gauge, *k*, which latter is between the arm *A* and the front under-beveled edge of the gauge-plate *D*, as shown in Fig. 1. This gauge, as well as the arm *A*, are confined, after adjustment, by means of the button *h*. The gauge *k* is a narrow-spring strip, which presents on one end a perpendicular shoulder and an overhanging lip, *i*, which, with the shoulder referred to, guides the edge of the work properly up to the needle in needle-bar *D'*. The arm

E. S. YENTZER.

Tuck-Creaser for Sewing-Machines.

No. 127,287.

Patented May 28, 1872.



Witnesses:
R. J. Campbell
W. Campbell

Ervington
Enoch J. Yentree
by his Attys
Mason & Lawrence

Statement of the case.

A terminates at both ends in right-angular extensions, to one, *b*, of which a pricking-point, *r*, is applied, over which is a spring-lifter, *b'*, perforated at *e*, and secured at its front end to the arm A. Above the plate *b'* is a creaser, *c*, composed of a plate beveled on its lower edge, and bent so as to afford two jaws with a narrow space between them, which space is directly over the perforations *e* and point *r*, as shown by Fig. 4. The creaser *c* is secured to the free end of a spring-rod, *a*, which extends along over the arm A and plate *g*, and is secured to the right-hand end of arm A. The point *r* pricks the cloth, the spring-plate *b'* frees the cloth from point *r*, and the creaser *c* leaves a crease in the cloth. B represents a spring-arm, which is secured to the right-hand end of the arm A by means of a C-shaped spring, and which extends over the plate D and over the creaser *c*, as shown in Fig. 1. This arm B is slotted to receive the needle on bar D' through it, so that when this bar descends it will depress the arm B, the creaser *c*, and the spring cloth-lifter *b'*. The arms A and B are both marked off with scales for readily adjusting the instrument to the width of tuck it is desired to make. For hemming, the button *h* is loosened and the marking frame A B detached from the jaws *j g* and secured fast, after which the gauge *k* is adjusted, according to a scale on the plate D, for the required width of hem. The gauge *k* remains attached to the plate D for all kinds of work, and is used alone—*i. e.*, without the turner—in felling or making lapped seams and edge-stitching. It is intended that the gauge *k* shall rest firmly upon the cloth-plate of the sewing-machine, so as to prevent the edge of the cloth from working beneath the perpendicular shoulder of this gauge.

The turner consists of a narrow-spring strip, D', with a slotted tapering scroll, *n*, formed on one end. Fig. 6 shows this turner before its end is bent in the form of a scroll, and *f* represents the slot, which leaves a narrow tongue, *n'*, and reduces the length of the turning portion, thus leaving the

Statement of the case.

edge of the cloth perfectly free to turn as it is fed up to the needle. This turner presses down firmly upon the cloth so as to keep it stretched smooth directly in front of the needle. This pressure can be regulated by bending the spring portion *D'* more or less, as may be found necessary.

Having described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The cloth-lifting spring *b'*, in combination with the fixed pricking-point *r*, substantially as described.

2. The creaser *c*, on spring-arm *a*, in combination with the fixed point *r* and spring-arm *B*, substantially as described.

3. The right-angular jaws *j g*, on plate *D*, in combination with button *h*, substantially as described.

4. In combination with a tucker having the cloth-lifting spring *b'* and fixed pricking-point *r*, I claim the spring-gauge *k* with its perpendicular shoulder and its overhanging lip *i*, as described and shown.

5. The combination of the spring-turner with the spring-gauge and jaws *j g* on foot or gauge-plate *D*, substantially as described.

ENOCH S. YENTZER.

Witnesses :

WALTER SCATES,

JOHN N. YOUNG.

HENRY W. FULLER, OF BROOKLYN, NEW YORK,
ASSIGNEE, BY MESNE ASSIGNMENTS OF ISRAEL
M. ROSE.

IMPROVEMENT IN TUCK-CREASING ATTACHMENTS FOR SEW-
ING-MACHINES.

Specification forming part of Letters Patent No. 40,084, dated September 22, 1863. Reissue No. 3,218, dated December 1, 1868.

To all whom it may concern :

Be it known that Israel M. Rose, of the city, county, and

I. M. Rose.
Guide & Hemmer.

N^o 3218

Fig. 1. Reissued Dec. 1, 1868.

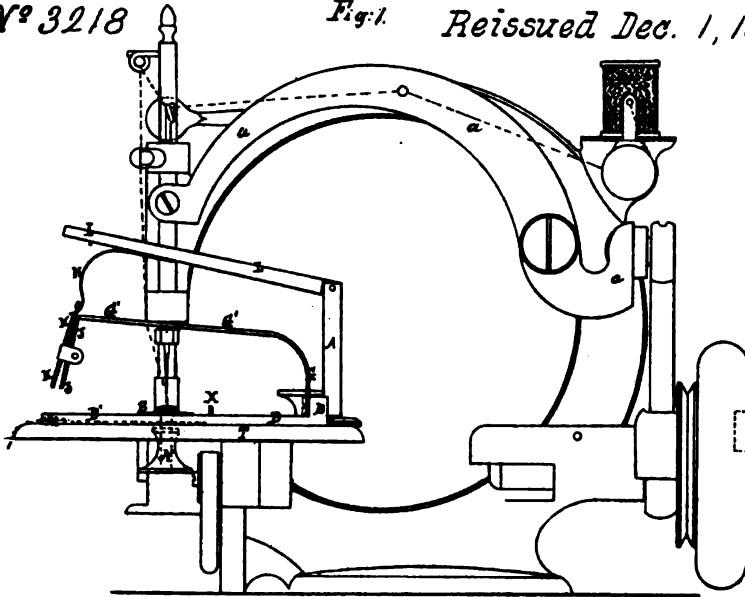


Fig. 4.

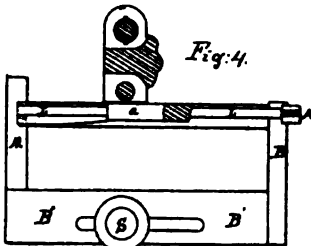


Fig. 3.

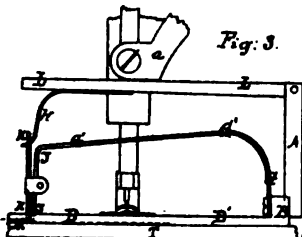
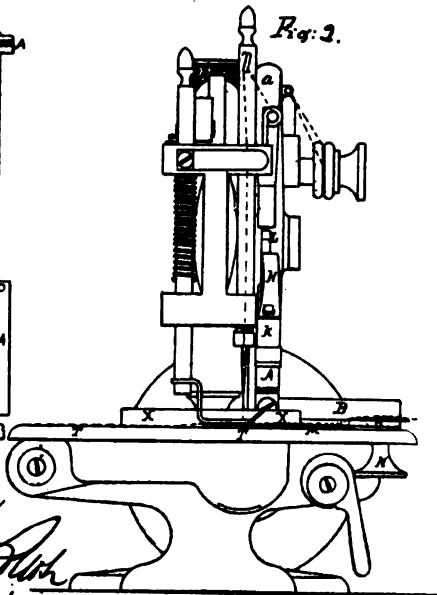


Fig. 2.



Witness
M. Rose
W. J. Brooks
his atty.

Statement of the case.

State of New York, did invent an Improved Tuck Marker or Creaser; and the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

Previous to this invention fabrics were marked or creased by means of a protuberance or point and a notch or indentation caused to impinge upon the fabric from opposite sides thereof. That mode of marking or creasing is open to the objection that fine goods will sometimes be cut by the marking operation, while on heavy or flimsy goods the crease is often insufficiently defined, which notch and point are separately adjustable to each other, as well as to the sewing-machine needle.

By the invention herein described marks or ridges (and obversely creases) are formed in the fabric by a succession of nips or pinches thereof, while it has motion imparted to it in line with the crease in any convenient manner, but usually the feed mechanism of a sewing-machine, for which it is intended to be used as an attachment; and said process of nipping or pinching is designed to obviate the objections aforesaid, which are attached to other tuck-markers and produce a more efficient instrument.

The said invention comprises the use of jaws, which are caused to descend with more or less force or pressure on the fabric while open, and then in being closed are capable of seizing a portion of such fabric and compressing the same tightly, such fabric being properly supported against the force of said jaws, and which operation, being repeated while the fabric is moved along, produces the required ridge or crease, in line of which the fabric will naturally fold to facilitate the forming of a tuck or tucks; and said invention also comprises certain details of construction, arrangement, and combination to adapt tuck-markers for use in connection with sewing-machines, and forming a tuck-creasing mechanism having an upper and under part connected, and together adjustable as to its relation with the needle of a sewing machine, and operated by a sewing-machine.

Statement of the case.

To enable others skilled in the art to make and use this invention, an apparatus will now be described constructed and acting in conformity with the principles thereof.

In the accompanying drawing, Figure 1 is a side elevation of the improved apparatus for creasing fabrics as attached to a sewing-machine. Fig. 2 is a front view of the same. Fig. 3 is a side view, showing part of the sewing-machine and the apparatus in action. Fig. 4 is a top view of Fig. 3.

The marks of reference correspond in all the figures.

B is a base-plate, having an upright standard, A, firmly secured thereto, so as to form a permanent part thereof. To the upper end of the standard is jointed a lever, L, which carries a spring-branch, H. Said branch is buckled at its lower end with a blade, K, which forms one of the jaws for seizing and crimping the fabric. The use of the lever jointed as aforesaid insures freedom of motion to and from the fabric, while the stiffness of the lever prevents any lateral motion of the creasing device J K. The lever is also designed to receive the force of the arm or other moving part of the sewing-machine, and transmit said motion directly to the jaws through the spring-branch H. The bed-plate B' has a small upright projection, B, to which is permanently fixed a spring-blade, G', having its front end bent downward at J, and forms a mate to the jaw R. These jaws are hinged together at v, and their lower ends are sharp or serrated, in order more readily to seize the fabric.

The object of the spring G is to cause the marking device to react after such creasing action, and follow the upward motion of the needle-arm, in order to give room for the free insertion and removal of the work, and the spring-branch H, as seen in that figure, is made to hold the outer jaw K away from the inner one, J, when in the normal position there shown.

It is important to have the creasing action take place as nearly as possible in front of the needle—that is, in line with the arm of the sewing-machine. Therefore there is one extension-plate, M, extending out laterally from the

Statement of the case.

base-plate B, in line with the movement of the feeding-device q ; and said plate supports the material immediately under the jaws, and receives the impinging action of said jaws thereon. This arrangement provides for bringing the creasing devices around or across the presser-foot q' , and for performing the creasing operation in the proper location with respect to the needle.

The movement of the parts is essentially as follows: When the lever L is moved downwards towards the base-plate the jaws will press any material lying on the bed M or T hard against it; then, the downward movement of the lever L being continued, the jaws close upon, gather, and double up the fabric, compressing it between them.

From the above description it will be apparent that this apparatus employs upper and under devices on opposite sides of the cloth, to act together conjointly and produce creases in the fabric.

To use the apparatus in connection with a sewing-machine it is secured to the bed or cloth plate T of the machine by a screw, N, which passes through the slot m' in the base-plate B'. In some cases, by so shaping the parts of the apparatus, the ordinary gauge-screw S may be used.

The several parts of the apparatus are so arranged, relatively, that when properly secured the lever L is immediately under the arm a of the sewing-machine, and when the machine is operated said arm will strike the lever L and actuate the creaser or tucker.

To do tucking on the apparatus with a sewing-machine, a fold is first made in the fabric by hand, and the gauge X is fastened by means of the set-screw s , to make the seam the proper distance from the edge of the required tuck. The apparatus is then adjusted, by means of the screw N and slot m' , in such relation to the needle p that the distance from the needle to the jaws is at least double the distance between the needle and the gauge L. The jaws (or upper part of the tucker) being permanently connected with the base-plate, (or under part,) such parts sustain a fixed re-

Statement of the case.

lationship to each other, and hence one movement or alteration of either part simultaneously adjusts the relative position of the whole tucker with respect to the needle.

When adjusted as required the fabric is placed in the machine, with the folded edge against the gauge X, and the machine started. The lever L, when depressed by the arm *a* of the sewing-machine, carries down the spring-branch H, and with it the jaws K and J, to the surface of the fabric lying on the bed-plate of the tucker or sewing-machine. The bed-plate, supporting the fabric immediately under the jaws, resists the impingement of the jaws thereon, and arrests their downward movement, while, the same motion of the arm *a* being continued, the jaws close, gathering up a portion of the fabric and pinching it. At this juncture it may happen that the downward stroke of the arm *a* may be a little more than sufficient merely to complete the pinching or marking of the fabric, and in such event the spring-branch H yields enough to comply with such surplus motion of the arm *a* aforesaid, and mollifies and relieves any straining of the sewing machine, easing the operation. On the upward motion of the arm *a* the jaws rise and open by the elasticity of the spring-branch H and spring G, while the fabric is advanced by the the feed mechanism of the sewing-machine. The arm *a* then again descends, the pinching process is again repeated, and thus, as the cloth is fed through the machine, a clear and well-defined ridge is formed on the fabric by the creaser at the same time that a seam has been sewed in the folded part thereof, forming a tuck. The cloth is next removed from the machine and folded on the line of the ridge or crease. As the work is proceeded with, and each time a tuck is sewed by the machine, the ridge or crease for the next tuck is made.

It will be observed that in the adjustment of the tucker in line with the slot *m'* the arm of the machine will act on the lever L at different points on the length of said lever, according to the width of tuck being formed. The application of the force of said arm is invariably made, however,

Statement of the case.

directly to or over the creasing device at the end of said lever, no matter at what point on said lever the force of the sewing-machine may be received. The result is, enhanced uniformity of action of the creasing mechanism under all conditions and adjustments incident to its successful use.

For communicating motion from the sewing-machine to the tucker any mode common to the art may be used.

Having thus described the invention of Israel M. Rose, what I claim is—

1. The machine, substantially such as herein described, for forming a ridge or ridges on fabrics, to be afterward folded in the line of such ridges.

2. The method of nipping or pinching the fabric to form ridges or creases thereon, as aforesaid, by means of jaws opened and closed at intervals to seize and pinch the fabric when at rest, and then release it as the same is moved along intermittently by a suitable feeding mechanism, as set forth.

3. The combination, with jaws arranged, as aforesaid, for action on a fabric, of a bed plate or plates to support the fabric receiving and resisting the impingement of the jaw or jaws thereon, substantially as specified.

4. A pinching mechanism, substantially as set forth, and in which the jaws are brought down in contact with, and made to impinge upon, the fabric while yet open, and are closed by the resistance then offered to the further descent of the jaws, substantially as described.

5. The combination of the creasing device or devices of a tuck-marker with a jointed lever, substantially as and for the purposes set forth.

6. A tuck-creasing mechanism, substantially such as described, having its upper and lower parts connected, and together adjustable as to its relation with the needle of a sewing-machine, and operated by the sewing-machine, substantially as set forth.

7. The spring G, for carrying the upper half of the creasing device away from the cloth after each creasing action, when relieved by the needle-arm, substantially as set forth.

Argument of counsel.

8. The combination, with a tuck-marker, having upper and under parts connected, and together adjustable, as specified, of the lever and spring, substantially as and for the purpose set forth.

HENRY W. FULLER,
Assignee of Israel M. Rose.

Witnesses :

E. B. BARNUM,
EARLE H. SMITH.

Messrs. Edward N. Dickerson, E. B. Barnum and C. C. Bonney, for appellants :

This suit is brought for the infringement of reissued letters patent No. 3,218, dated December 1, 1868, the original patent having been numbered 40,084, and dated September 22, 1863, granted to James Willcox, assignee of I. M. Rose.

Tuck creasing had been done by hand up to the invention of Fuller, patented June 5, 1860. Fuller's invention described a mechanism in three separate parts, attached separately to the bed-plate, presser foot and needle-arm respectively. He had placed his invention on the market and reduced it to two parts, one carrying the upper marker connected with the needle-arm, and the other supporting the lower marker connected with the bed-plate of the machine. This plan involved two adjustments at every application to the machine.

In the spring of 1863, Henry W. Fuller brought his tuck-creaser to the office of the Willcox & Gibbs Sewing Machine Co., desiring to have it adapted to that machine ; and Israel M. Rose, a mechanic in employ of the company was instructed to see what could be done with it. Rose experimented and invented the pinching method of creasing, with jaws opened and closed at intervals.

Rose assigned his invention to Willcox to whom the patent was issued, and by whom it was subsequently assigned to the appellant Fuller.

The court erred in holding that the sixth claim of the

Argument of counsel.

Rose patent was limited in its application to the precise form or class of tuck-creasers shown and described in the specification and drawings.

It is submitted that his improvement was applicable to the tuck-creasers then in use as well as to that one he invented ; and that an improvement capable of application to a class cannot be limited to a single variety.

There is absolutely nothing of value in the Goodrich creaser that is not found in Rose's invention.

It is insisted that the narrowest construction that could fairly be given to the claims of the Rose patent would enable it to cover at least substantially identical mechanical parts.

But it is not pretended that any one invented this mode of creasing by jaws before Rose. He stands at the head of the art in this direction and his patent is entitled to a liberal construction, which shall give him the full benefit of his invention.

It is the very familiar case of the invention of a new mode of operation, by means which are new in the application, but which *might* be old in themselves ; and the question is whether another can appropriate that new mode of operation by merely changing the forms and arrangements of the devices which carry it out. It may be said that pincers are not new in themselves ; but it cannot be said, in view of the evidence, that cloth was ever creased by pincers operated automatically for that purpose ; and it is elementary law that the inventor of the new mode of operation stands upon a different and far broader ground, than the inventor of new devices to carry out an old mode of operation.

This inventor has patented his devices also, and they are infringed, but if the devices were all old *per se*, the patent would yet be valid for their application to carry out a new mode of operation.

Messrs. Walter B. Scates and H. C. Whitney, for appellees :

(These two cases were argued with Fuller v. Yentzer, p. 138 *ante*).

Opinion of the court.

Mr. Justice CLIFFORD delivered the opinion of the court:

Modifications or alterations in an invention consisting in a combination of old ingredients, which merely substitutes another old ingredient for one of the ingredients in the patented combination, is an infringement of the patent, if the substitute performs the same function and was well known at the date of the patent as a proper substitute for the one omitted from the patented invention; but the rule is otherwise if the ingredient substituted is a new one, or performs a substantially different function, or was not known at the date of the patent as a proper substitute for the one omitted from the patented combination.

Both of these suits were instituted by Henry W. Fuller, who became, by certain *mesne* conveyances, the owner of the invention by assignment in due form. Since then, the other complainant having become the owner of the patent, was, on motion of the respondents, made a party complainant in each of the two suits.

Sufficient appears to show that Israel M. Rose was the supposed inventor of the improvement; that the original patent was granted to James Willcox, assignee of the inventor; that the first named complainant, having subsequently become the owner of the patent, surrendered the same; and that the reissued patent, bearing date December 1, 1868, on which the present suits are founded, was granted to the rightful owner of the invention at the date of the reissued patent.

Remarks respecting the title of the complainants are unnecessary, as it is not questioned by the respondents, nor is it necessary to enter into any comparison of the reissued patent with the original, as the means for such comparison are not exhibited in the record.

Briefly stated, the allegation is that the patented invention consists of a new and useful improvement in mechanism for marking cloth in a sewing-machine, or for a new method of marking a crease in cloth by what is known as

Opinion of the court.

the pinching process, and for other improvements in the mechanism of a tuck-creaser, independent of the creasing devices, and that the respondents, since the first day of May, 1872, have infringed the same, as more fully set forth in the bill of complaint.

Process was served; and the respondents appeared and filed an answer, setting up the following defenses, which it is important to notice: (1) That the supposed improvement was not patentable, because it had been in public use more than two years before the inventor applied for a patent. (2) That it was not patentable, because it was well known and had been in common use long before the alleged invention. (3) They deny the charge of infringement, and justify all their acts under a patent granted to Enoch S. Yentzer, dated May 28, 1872, for an improvement in tuck-markers for sewing-machines.

Proofs were taken, the parties heard, and the Circuit Court entered a decree in each case, dismissing the bill of complaint. Immediate appeal was taken by the complainants in each case to this court, and the questions here are the same as those considered and decided in the Circuit Court.

Previous to that invention the statement of the inventor is that fabrics were marked or creased by a protuberance or point and a notch or indentation caused to impinge upon opposite sides of the fabric, and the patentee states that that mode of marking or creasing the fabric is open to the objection that fine goods will sometimes be cut by the marking operation, while in heavy or flimsy goods the crease is often insufficiently defined.

Instead of the point and notch, the present invention forms marks, ridges or creases in the fabric by a succession of nips or pinches of the same while it has motion imparted to it, in line with the crease. Motion is usually given to the fabric by the feed mechanism of a sewing-machine, in which it is intended it shall be used as an attachment; but

Opinion of the court.

the motion may be imparted to the fabric in any other manner.

Objections, it is said, exist to other modes of forming creases for the described purpose, and that the process of nipping or pinching is designed to obviate those objections to other tuck-markers, and to produce a more efficient instrument. Devices called jaws are provided for the purpose, which are caused to descend while open, with more or less force or pressure, on the fabric, and then in being closed are capable of seizing a portion of the fabric and compressing the same tightly, the fabric at the same time being properly supported against the descending force of the jaws, and which operation, being repeated while the fabric is moved along, produces the required ridge or crease, in the line of which the fabric will naturally fold, to facilitate the forming of the tuck for future operations.

Said invention also comprises certain details of construction, arrangement and combination to adapt tuck-markers for use in connection with sewing-machines, forming a tuck-creasing mechanism having an upper and under part adjustable as to its relation with the needle of a sewing-machine, and to be operated by the sewing-machine. Reference is made to the drawings for the different views of the apparatus when properly arranged in a sewing-machine in operation, to effect the described result. Detailed description is also given, of the various elements or ingredients of the apparatus and of their mode of operation.

Mention is first made of the base-plate, which has an upright standard firmly secured thereto, so as to form a permanent part of the apparatus. To the upper end of the standard, a lever is jointed which carries a spring-branch, buckled at its lower end with the blade that forms one of the jaws for seizing and crimping the fabric. Freedom of motion to and from the fabric is insured by the lever, jointed as before explained, the suggestion being that the stiffness of the lever prevents any lateral motion of the creasing

Opinion of the court.

device ; and the statement is that the lever is also designed to receive the force of the arm or other moving part of the sewing-machine, and that it transmits the motion directly to the jaws through the spring-branch, which is carried by the lever jointed to the upper end of the standard.

Besides the base-plate there is a plate called the bed-plate, with a small upright projection, to which is permanently fixed a spring-blade having its front end bent downward, and which forms a mate to the jaw already described. These jaws are hinged together, as shown in the drawings, their lower ends being sharp or serrated, in order more readily to seize the fabric.

Effectual means are provided to cause the marking device to react after each creasing action, and follow the upward motion of the needle-arm, in order to give room for the free insertion and removal of the work ; and this spring-branch shown in the drawings is made to hold the outer jaw away from the inner one when in the normal position there exhibited.

Creases are to be made in the fabric, and the design is that the creasing action shall take place as nearly as possible in front of the needle, and in line with the arm of the sewing machine ; and, to secure that, an extension-plate is provided extending out laterally from the base-plate, in line with the movement of the feeding device, which supports the material under the jaws, and receives their impinging action in the operation of making the crease. By that arrangement the creasing devices are brought across the presser-foot in the proper location with respect to the needle for performing the creasing operation.

Upper and under devices are employed, on opposite sides of the cloth, to effect the patented result, and a particular description is given of the means and mode of operation of the same by which the jaws seize the fabric and double up and compress the same so as to produce the described creases by the apparatus when attached to a sewing-machine. When

Opinion of the court.

properly attached, the several parts of the apparatus are so arranged that the lever is immediately under the arm of the sewing-machine, and the arm, when the machine is operated, will strike the lever and actuate the creaser or tucker.

Tucking may also be done by the apparatus when attached to a sewing-machine; but, in order to accomplish that, a fold must first be made, by hand, in the fabric, the gauge being fastened by a set screw to make the seam the proper distance from the edge of the required tuck. Fit means are also shown in the drawings for adjusting the apparatus in such relation to the needle that the distance from the needle to the jaws will be at least double the distance between the needle and the gauge.

Suffice it say that one movement or alteration of either part will adjust the whole tucker with respect to the needle, as the upper part is permanently connected with the under part; and when adjusted as required the fabric is placed in the machine with the folded edge against the gauge, and the machine being started, the lever carries down the spring-branch and with it the jaws to the surface of the fabric, which operate as before explained. On the upward motion of the arm the jaws rise and open by the elasticity of the springs, the fabric being advanced by the feeding mechanism of the sewing-machine. Movements of the kind are continued and the pinching process repeated, until the cloth is fed through the machine, causing a well defined ridge to be formed in the fabric by the creaser, at the same time that a seam is sewed in the folded part of the same, forming a tuck.

Eight claims are appended to the specification, and the charge is that the respondents have infringed the first, second, fifth, sixth and eighth, five in all, substantially as follows: (1) The mechanism as described for forming a ridge or ridges on fabrics to be afterwards folded in the line of such ridge. (2) The method of nipping or pinching the fabric to form ridges or creases thereon by means of

Opinion of the court.

jaws opened and closed at intervals to seize and pinch the fabric when at rest, and then release it as the same is moved along intermittently by a suitable feeding mechanism. (3) The combination of the creasing device or devices of a tuck-marker with a jointed lever, for the purposes set forth. (4) A tuck-creasing mechanism, such as described, having its upper and lower parts connected, and together adjustable, as to its relations with the needle of a sewing machine, and operated by the sewing machine, as set forth. (5) The combination with a tuck-marker having upper and under parts connected, and together adjustable as specified, of the lever and spring, for the purposes set forth.

Argument to show that a result is not patentable is not necessary, as that proposition is decided in the opinion just delivered (*a*), as well as in many other cases to which reference might be made. Apply that rule to the several claims of the patent in this case, which it is alleged the respondents have infringed, and it clear that they are all for the apparatus or certain portions of the apparatus described in the specification of the patent set forth in the bill of complaint.

Whether tested by the descriptive portion of the specification or by the specific claims appended to the same, it is clear that the invention consists of a described apparatus intended to be attached to a sewing-machine for the purpose of making a mark, ridge or crease, in cloth by a succession of "nips or pinches thereof" while it has motion imparted to it by the feeding device of the sewing-machine, as already sufficiently explained, the work of sewing being performed during the same operation of the feeding device.

Detailed description is given, of the elements of the apparatus, from which it plainly appears that the invention does not include any described means of attaching the apparatus to the sewing-machine. Particular means of the kind are neither described nor claimed, nor are they shown

94 U. S. 304-305.

(*a*) Otto substitutes for "just delivered" "in the preceding case."

Opinion of the court.

in the drawings in a way to justify the conclusion that the means of attaching the apparatus to the motive power are any part of the invention. Instead of that, the patentee states that motion may be imparted to the apparatus in any convenient manner; nor is there anything in any one of the eight claims of the reissued patent which would afford any support to a different theory.

Fuller's patent for his own invention preceded that of Rose by several years; but it is evident from a comparison of the two that they are substantially different in many respects, so that the latter may be considered as valid to the same extent that it would have been if the first invention had never been made.

Improvements in an apparatus of the kind may be valid if new and if they accomplish a new and useful result, even though all the elements of the same are old, provided the combination or arrangement of the elements is new and of such a character that it involved invention to construct the combination or arrangement. When a subsequent apparatus is substantially the same as one which precedes it, the former is not the proper subject of a patent; but if it be substantially different in construction and mode of operation, then it is as much the proper subject of a patent as if nothing of the kind had ever before been invented.

Tested by these rules, it is clear that the Rose patent is not superseded by the Fuller patent, which preceded it in point of time.

Two of the defences set up by the respondents, to-wit: the first and second, must also be overruled, for the reason that they are not sustained by the proofs exhibited in the record.

They also deny infringement, and the decision in the case must turn upon that issue. Infringement is charged by the complainants, and the burden of proof is upon them to sustain the charge. Beyond doubt, it is established in these cases that all the elements or ingredients of the patented

Opinion of the court.

apparatus are old and that the invention consists in the combination or arrangement of the several devices of which the apparatus is composed.

Differences exist in the answers filed in the two cases; but the respondents in both aver and allege that all the tuck-markers or creasers constructed, used or sold by them were constructed under the patents to Enoch S. Yentzer, and in conformity therewith; and that they have in no respect infringed or violated the rights of the complainants. Coming to that proposition, it is plain that it involves two questions: (1) Whether the respondents have constructed, used or sold apparatuses not constructed in conformity with the patent under which they seek to justify all their acts. (2) Whether the apparatuses which they have constructed, used or sold, infringed the patent described in the bill of complaint.

Some difficulty attends the solution of the first question, because all the evidence applicable to the three cases was taken together, to save expense. It consists of depositions, admissions, documents, models and other exhibits; but, in view of the whole, the court is of the opinion that the apparatuses constructed and sold by the respondents were constructed in conformity with the patents under which they profess to act.

Support to that view is also derived from the opinion of the Circuit Judge exhibited in the record, in which he admits that the complainants would be entitled to a decree if their construction of the Rose patent was correct. Damages are claimed in that case for an alleged infringement of the sixth claim of the patent, which is for a tuck-creasing mechanism such as described, having its upper and lower parts connected, and together adjustable as to its relation with the needle of a sewing-machine, and operated by the sewing-machine as set forth.

Nothing can be plainer than the proposition that the claim there made is for the previously described apparatus, when arranged in a sewing-machine, as the motive power

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for operating the patented apparatus. Judging from the opinion of the Circuit Judge, it would seem that the complainants did not claim that the respondents had constructed improvements not within their patent but that they, the complainants, could claim under their patent, every form of mechanism by which a creaser is attached or adjusted to a sewing-machine, by which unity of adjustment is accomplished, which is plainly an erroneous construction of their patent.

Viewed in the light of all the proofs, the court is of the opinion that the apparatuses constructed and sold by the respondents were constructed in conformity to the patents under which they justify in their answer.

Five of the claims of the patent, to wit: the first, second, fifth, sixth and eighth, are involved in the charge of infringement in the third suit, which is the second suit under consideration in this case. Enough has already been remarked to show what the opinion of the court is in respect to the construction of the patent, and that the decision of the case depends upon the question of infringement. What has already been remarked is sufficient to explain the views of the court as to the nature and character of the apparatus of the complainants and its mode of operation, and it will be sufficient to refer to the opinion just delivered for a full exposition of the views of the court as to the nature, character and mode of operation of the patent under which the respondents justify in their answer. Better means of comparison and decision need not be required than is found in the respective specifications of these patents. Careful comparison of the two instruments has been accordingly made, and the court is unhesitatingly of the opinion that the charge of infringement is not proved, and that there is no error in the record.

Decree in each case affirmed.

Dissenting, Mr. Chief Justice WAITE, Mr. Justice STRONG, Mr. Justice MILLER and Mr. Justice BRADLEY.

Notes and Citations.

Notes:

See Fuller *v.* Yentzer, 94 U. S. 288, p. [138 *ante.*]

Patents in suit:

No. 28,633. Fuller, H. W. June 5, 1860. Marking Cloth for Sewing-Machines *a.*

No. 40,084. Rose, I. M. September 22, 1863. Reissue No. 3,218. December 1, 1868. Marking Cloths in Sewing-Machines *b.*

OTHER SUITS ON SAME PATENT:

Fuller *v.* Goodrich *v.* Yentzer, 1874. 6 Biss. 203 ; 1 Ban. & Ard. 520 *a b.*

Fuller *v.* Yentzer, 1877. 94 U. S. 288 *a* [p. 138 *ante.*]

Syllabus.

JOSHUA MERRILL, APPELLANT, v. DAVID M. YEOMANS ET AL.*

94 (4 Otto) U. S. 568-574. Oct. Term, 1876.

[Bk. 24, L. ed. 235; 11 O. G. 970.]

Affirming *Ibid*, 1 Holmes 331.

Argued April 5, 1877. Decided April 23, 1877.

Process. Infringement. Particular patent construed. Product. Claims. Combination. Description. Product and process. Construction of patents.

1. A patent for a process is not infringed by the sale of an article similar to that produced. (p. 216.)
2. The claim in letters patent No. 90,284, J. Merrill, May 18, 1869, Hydrocarbon Oil, to "the above described new manufacture of the deodorized heavy hydrocarbon oils suitable for lubricating and other purposes, free from the characteristic odors of hydrocarbon oils, and having a slight smell like fatty oil, from hydrocarbon oils, by treating them substantially as hereinbefore described," construed and *held* that the word "manufacture" may be used to express the process or the product thereof, but when taken in connection with the words "by treating them substantially as is hereinbefore described," it renders the claim in effect to the new mode of manufacturing hydrocarbon oils by treating them as hereinbefore described, and not for the product. (p. 216.)
3. The claims in a patent are to be considered as distinct from the description contained in the specification, and as representing what part of the matter described the patentee claims as his invention, and for which he asks protection. (p. 217.)
4. Inventions or discoveries are usually improvements upon some existing article, process or machine, and are only useful in connection with it. It is necessary, therefore, for an applicant to describe that upon which he engrafts his invention, as well as the invention itself. (p. 217.)

*See Explanation of Notes, page III.

Statement of the case.

5. When the invention is of a new combination of old devices it is necessary to describe with particularity all the old devices, and then the new mode of combining them. (p. 218.)
6. While it is essential that the specification should describe such matters, both old and new, as are necessary to an understanding of the invention, the claim must contain a distinct and specific statement of what the applicant claims to be new and of his invention. (p. 218.)
7. One who proposes to secure a monopoly of certain inventions at the expense of the public should set forth with clearness and precision the thing which no one but himself can use or enjoy without paying him for the privilege of doing so. (p. 218.)
8. The inventor of an article is entitled to protection therefor, however produced, and there is no reason why an applicant for a patent, if he had in his mind a claim for the article produced, should limit his claim by a description of the process. (p. 219.)
9. The courts are inclined to give a patentee the benefit of a liberal construction of the patent, and when it appears that a valuable invention has really been made, to uphold that which was invented, and which comes within any fair interpretation of the claim; but where there were three inventions described in the patent, the apparatus, the process, and the product, and but two claims made to the apparatus and the process respectively, each of which was valid and for the invention described therein, the court refused to give effect to the third invention, which the patentee has failed to claim, and *held*, if the patentee was entitled to a patent for the product, his legal remedy was by reissue. (p. 221.)
10. The interests of the public demand that the claims in a patent should clearly and distinctly define and limit the actual invention claimed by and secured to the patentee. (p. 222.)

Appeal from the Circuit Court of the United States for the District of Massachusetts.

The case is fully stated by the court.

The specifications and drawings of Merrill's patent are as follows :

Statement of the case.

JOSHUA MERRILL, OF BOSTON, MASSACHUSETTS.

IMPROVED MANUFACTURE OF DEODORIZED HEAVY HYDRO-CARBON-OILS.

Specification forming part of Letters Patent No. 90,284, dated May 18, 1869.

To all whom it may concern :

Be it known that I, Joshua Merrill, of the city of Boston, in the county of Suffolk and State of Massachusetts, have invented a new and Improved Manufacture of Deodorized Heavy Hydrocarbon-Oils, suitable for lubricating-oils, or for carriers' use ; and I do hereby declare that the following is a full and correct description thereof and of the mode of manufacture.

My invention relates to the heavy hydrocarbon-oils, which have heretofore been produced by distilling crude petroleum, or the crude oils obtained from the distillation of bituminous coals, bituminous shales, bituminous schists, asphaltum, and other substances producing hydrocarbon-oils by distillation.

It has been the practice to treat such heavy oils with acids and alkalies, for the purpose of removing the disgusting odor peculiar to these oils, which renders them extremely objectionable for use in the arts and for lubricating purposes. Such processes are well known, and improve the character of the odor of the oils ; but, nevertheless, the oils so treated have a persistent disagreeable smell, which makes them offensive, and undesirable for use in close, warm rooms, as in woolen manufactories. Attempts have been made to remove the smell by filtration, with but partial success.

To make heavy hydrocarbon-oils free from the characteristic unpleasant odors of heavy hydrocarbon-oils, I take the heavy oils which have been separated from the lighter oils and from mechanical impurities by distillation, and, after chilling and expressing the solid paraffine, when such opera-

Statement of the case.

tion is necessary, place them in a still, heated by a fire underneath, and slowly and gradually raise the temperature until from ten to thirty per cent. of the contents of the still are distilled over, when the still is cooled down and the remaining contents removed. The matters which go over to the condenser have a very foul, offensive, and disgusting odor, but the oil remaining in the still, if the operation has been properly conducted, is free from the characteristic offensive odor of hydrocarbon-oils, and has no smell except a slight odor similar to that of fatty oils. It can be mixed, in all proportions, with sperm, lard, fish-oils, and vegetable oils, and is so neutral in its character that it takes the odor of the oil that it is mixed with. If mixed with twenty per cent. of sperm-oil, it does not perceptibly change the smell of the sperm-oil. The process may be conducted in a common still, heated by fire-heat, as above mentioned, but will be facilitated, and oil of lighter color produced, by introducing superheated steam into the heated oil within the still, as hereinafter more fully described.

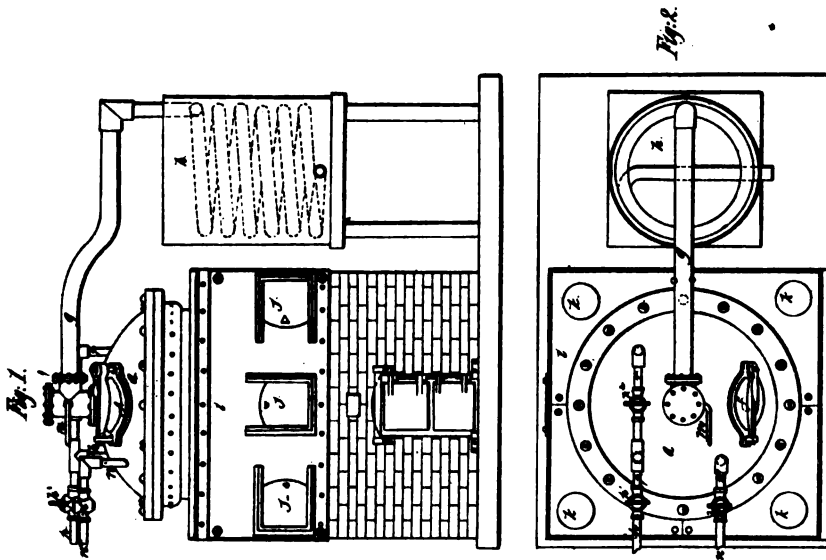
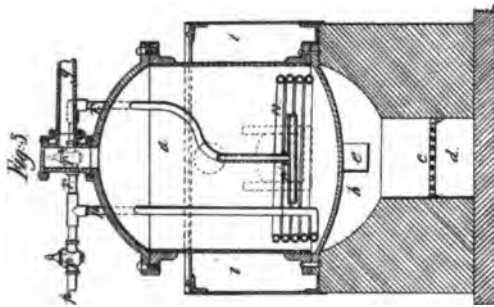
When operating by this process upon the paraffine heavy oils obtained from petroleum, bituminous coals, and shales, and substances producing paraffine-oils, I carry on the distillation until the oil which comes from the condenser has a specific gravity of 36° Baumé's hydrometer, when, if the process be stopped, the remaining oil in the still is inodorous, or free from empyreumatic odors; but, by carrying on the distillation further, and raising the temperature until the oil running from the condenser has a specific gravity of 32° Baumé, the remaining oil will be thicker or more oily, and yet inodorous. When operating upon heavy oils, made from asphaltum, I continue the distillation until the oil running over from the condenser has a specific gravity of from 28° to 25° Baumé's hydrometer. The temperature within the still will depend upon the character of the oil acted upon and upon the mode of working the still. When superheated steam is used, the temperature is much lower than when the operation is conducted without it, the steam

J. Merrill.

Making Hydro Carbon Oils.

N^o 99,284.

Patented May 18, 1869.



*Witness:
Ch. W. Huntington
Malcolm C. Greene*

*Inventor:
Joshua Merrill*

Statement of the case.

materially assisting in vaporizing the matters that it is desirable to remove.

It is not practicable to specify particularly the specific gravity of the heavy oils used in my new manufacture. These oils are well known to the trade, and distinguished from the lighter burning-oils and naphthas by the term "heavy oils," their specific gravity varying greatly between the asphaltum-oils and paraffine-oils. Heavy hydrocarbon-oils, produced from the same substances, vary considerably in specific gravity, by reason of the presence of more or less of the lighter oils, which are always to be found mixed with them, and, therefore, the percentage of oil that is to be distilled over in working this process will vary considerably.

I do not assume to know the reason why the above described process produces heavy oils, free from the characteristic odors of hydrocarbon-oils, but suppose that these odors arise from matters resulting from decomposition at the temperature at which the heavy oils vaporize and go over, and that these matters, after they are condensed with the heavy oils, will vaporize at a temperature lower than that required to vaporize and distill over the heavy oils, and, therefore, may be separated from the heavy oils by distillation in a close still, at a temperature below that required to distill over the heavy oil, which, not being vaporized, will remain free from the odorous matters which would result from decomposition at the temperature required to vaporize it and distill it over.

In carrying on my process, I use the heavy hydrocarbon-oils for sale in the market, whether they have been treated by chemicals or not, the result of the process in either case being the same.

The accompanying drawings represent the distilling apparatus I prefer to use in carrying out my invention, Fig. 1 being a front elevation of the still and condenser; Fig. 2, a plan view; and Fig. 3, a vertical cross-section of the still and furnace.

Statement of the case.

Letter *a* represents the still ; *b*, the fire-place, formed in brick-work, upon which the still is placed, the fire being applied to the bottom of the still ; *c*, the grate ; *d*, the ash-pit ; *e*, the outlet from the fire-place to the chimney ; *f*, the man-hole, for access to the interior of the still, covered by a suitable man-hole plate ; *g*, the goose-neck or pipe leading from the still to the condenser *h* ; *i*, the casing surrounding the still, provided with doors, *j j j*, covering apertures in front of the casing, and lids, *k k k*, covering circular apertures in the top of the casing, designed to be opened to admit air to the body of the still within the casing, in order to regulate the temperature of the still or to cool it down rapidly when the fire is removed from below. *m* is a small filling-pipe, shown broken off in the drawing, but which should be connected with a pump, or a reservoir of oil, and furnished with a shut-off cock, to be closed when the still is filled. So far, the apparatus is substantially the same as that described in the Letters Patent of the United States granted to me July 30, 1861.

I will now proceed to describe an apparatus that I have since invented, for superheating steam, and applying it to the heated oil within the still, and which may be used with any still heated by a fire. I place a perfectly tight coil of steam-pipe, *n*, within the still, at or near the bottom, and connect one end of the coil with a steam-boiler, by a pipe, *n'*, which passes through the top of the still, and is furnished with a cock, *n''*, to control the admission of steam to the coil. The other end of the coil is connected with an outlet-pipe, *p*, which passes up through the top of the still. A stop-cock, *p'*, is placed near the open end of the outlet-pipe. A return-pipe, *r*, connected with the outlet-pipe, between the stop-cock and the still, passes down into the still, terminating in a horizontal discharge pipe *r'*, perforated, as usual, with small holes for the escape of the superheated steam into the oil. The return-pipe *r* has a stop-cock, *r''*, to control the passage of the superheated steam from the outlet pipe, through the return-pipe, to within the still,

Statement of the case.

so that, when it is shut, no superheated steam passes into the oil.

The advantage of this arrangement of the superheating-coil and pipes is that the steam is superheated in the coil to about the temperature of the oil it is to be applied to, by the heat of the oil itself, and then carried above the top of the still, through the outlet-pipe, in order that the operator may, by turning the cock *p'* near the open end of the outlet-pipe, discharge any water that has got into the coil, and ascertain when the steam has become sufficiently superheated before letting it into the oil within the still, through the return-pipe. It is obvious that this arrangement of pipes for superheating and discharging superheated steam into the oil can be used for any operations carried on in stills, which require superheated steam of about the temperature of the contents of the still.

In carrying on my new manufacture of deodorizing heavy oils with this apparatus, I place the heavy oil to be deodorized in the still, and heat it by the fire beneath to the required temperature to commence the operation, the steam being shut off from the coil, and the outlet-cock being opened, to admit of the expulsion of any water from within the coil. When the oil is heated to from about 220° to 300° Fahrenheit's thermometer, depending upon the boiling-points of the oils treated, which vary greatly, I open the steam-cock carefully, and let steam pass into and through the coil, wherein it becomes rapidly superheated to about the temperature of the oil. Having ascertained that the steam passing through the coil is sufficiently superheated, I close the out-let cock, and then carefully open the cock in the return-pipe, and let a small amount of superheated steam pass down into the still, where it escapes, by the small openings through the pipe, into the body of the hot oil. The superheated steam passes up through the body of the oil and over to the condenser, carrying along with it the more volatile portions of the oil, which condense and flow from the condenser into a tank provided for their reception.

Statement of the case.

I continue this operation, keeping the fire dull and moderate under the still, and the temperature slowly rising all the time, until I distill off all the volatile matters, which readily flow out with the steam, usually distilling off from twenty to thirty per cent., as the case may be. I now draw out the fire, then shut off the steam, and leave the oil to cool in the still. When cool, it is drawn into suitable tanks, and is ready for sale and use. It has been so completely divested of its foetid and pungent odors, having only a slight smell like a fatty oil, and has become so oily as to be greatly improved and increased in value as a lubricating-oil, or for any purposes it may be used, either alone or mixed with other oils.

I prefer to use superheated steam in working the above-described process, because I can work at lower temperature than by the fire heat alone; but do not wish to confine my invention to its use in combination with the fire, because I can accomplish the same result by fire-heat alone, applied to the still, or by any known mode of heating a still, which will heat the oil sufficiently to distill over the portions of the oil necessary to be removed; but, in that case, I am obliged to conduct the process at higher temperatures, and the remaining oil left in the still is darker in color than when superheated steam is used in combination with the fire-heat.

From the above, it will be obvious that my invention consists in producing heavy hydrocarbon-oils, suitable for lubricating and other purposes, and free from the characteristic odors of heavy hydrocarbon-oils, from heavy hydrocarbon-oils, by distilling from them the volatile matters from which the objectionable odors arise, and, at the same time, preventing new formations of such matters, by keeping the temperature of the oil in the still below that at which these matters form by decomposition of the oil.

It will also be evident to those skilled in the art that my invention will be used, if the above mentioned process be worked to produce the deodorized heavy oils above described, from

Argument of counsel.

distilled hydrocarbon-oils, from which the lighter burning-oils and naphthas have not been separated, so long as they contain heavy oils, because the naphtha and lighter oils will go over first, leaving the heavy oil in the still to be operated upon; and also because, as before stated, the distilled heavy oils always contain more or less of the lighter bodies, owing to the breaking up of a portion of the heavy crude oil in the process of distillation.

I claim—

1. The above-described new manufacture of deodorized heavy hydrocarbon-oils, suitable for lubricating and other purposes, free from the characteristic odors of hydrocarbon-oils, and having a slight smell like fatty oil, from heavy hydrocarbon-oils, by treating them substantially as herein-before described.

2. Also, in combination with a still suitable for distilling oils, the superheating-coil, with its steam-pipe, outlet-pipe, and return-pipe, and their stop-cocks, arranged substantially as described.

JOSHUA MERRILL.

Witnesses:

CHAS. H. PLUMPTON,
MALCOLM C. GREENE.

Messrs. Chauncey Smith, Charles M. Reed and Walter Curtis, for appellant:

Before considering the facts of the case we desire briefly to call the attention of the court to the subject matter of the patent as shown on the face of the patent itself.

The plaintiff and appellant claims that it is a new oil described in the specification.

The defendant claimed in the court below that it is the process described by which the oil described is produced.

However ambiguous the word "manufacture" may be in the English law, it is clear that in the Act of Congress it is used to designate an *article of manufacture* as distinguished from the *art* or *process* of making it. When-

Argument of counsel.

ever, therefore, the word is used in letters patent of the United States, there is a strong presumption that it is used in the same sense. That this is the sense in which the term "improved manufacture" is employed in Merrill's patent, is apparent from the language both of the patent and the specification.

It is well settled that letters patent will be construed if possible, so as to make the claim co-extensive with the patentee's invention. In the present case the language of the specification throughout shows clearly that the patentee believed himself to be the inventor of a new oil, differing in its physical characteristics and its capacities for use from any oil then in existence. This oil he has made the subject matter of his patent. The article itself being new, no reason can be given why he should claim it only when made by a particular process. We know of no decision or even dictum that a claim for a manufacture must be construed as limited to that manufacture when made by substantially the same process as is described in the specification.

In the present case, therefore, although Merrill had invented a new process as well as a new article of manufacture, he had a right to claim the article broadly whether made by that process or not.

In *Corning v. Burden*, 15 How. 269 [6 Am. & Eng. 69], the court says: "It is true that the patentee, after describing his machine, has set forth his claim in rather ambiguous and equivocal terms, which might be construed to mean either a process or a machine. In such cases the construction should be that which is most favorable to the patentee *ut res valeat quam pereat*. See also,

Ransom v. Mayor of N. Y., 1 Fish. 262; *Whipple v. Middlesex Co.*, 4 Fish. 42; *Kittle v. Merriam*, 2 Curtis, 478; *Rubber Co. v. Goodyear*, 9 Wall. 795 [8 Am. & Eng. 150]; *Andrews v. Carman*, 9 O. G. 1011.

(The remainder of the argument discusses at great length the question of infringement.)

Argument of counsel.

Mr. Causten Browne, for appellees :

The defendants are charged with infringement of the first claim of the Merrill patent, by *selling* certain oil known in the case as "neutral topaz oil." This claim is for *a process*, and not for *a product*; and the bill cannot be maintained against the defendants, who have no connection with the manufacture, and only buy and sell the oil in the market, and are not charged in the bill as manufacturers. Even if (as is not the case here) the product were new and patentable, yet, the patent being for a process, it would not be infringed by selling the product. Curtis on Pats. §§ 313, 314.

The *product* is not patentable, because it does not differ in any patentable respect from several pre-existing paraffine oils which were extensively sold in this country before the date of Merrill's invention. The difference is one of *degree* only.

In support of our own position, that the patent is for an art or process, and not for a product, we ask the court to notice how the patentee, on page 8 of the record, after having described his process, and before going on to describe the apparatus which he prefers for the purpose, says: "I do not assume to know the reason why the above described process produces, etc." This passage, which is a very critical one in the specification, would be quite superfluous if the invention described was a new article of manufacture, and the process described had been merely put in to show how the article might be made.

Now it is highly improbable that if he had intended to patent *an article of manufacture, however made*, he would have described the process of making it, explained his view of the *rationale* of that process described with drawings the apparatus which he preferred to use for working that process, when all that the law required him to do, if he was patenting an article of manufacture, was to describe some *one* practicable way of making it.

But now we submit that, even construing the patent as

Opinion of the court.

for an *article of manufacture*, it must be so limited that no ground remains for the charge of infringement.

(Most of argument was on question of infringement)

Mr. Justice MILLER delivered the opinion of the court:

The appellant in this case, who was complainant in the Circuit Court, obtained a patent in May, 1869, for a new and useful invention, which relates to the heavy hydrocarbon-oils; and he sued the appellees, who were defendants in that court, for an infringement of his patent.

The defendants were dealers in oils, and not manufacturers of them. If the appellant's patent was for a new oil, the product of a mode of treating the oils of that character which he describes in his application, the defendants may be liable; for they bought and sold, without license or other authority from him, an oil which is proved to be almost if not quite identical with the one which he produced. If, however, appellant's patent is only for the mode of treating these oils invented and described by him, in other words, for his new process of making this new article of hydrocarbon-oil, then it is clear the defendants have not infringed the patent, because they never used that process or any other, for they manufactured none of the oils which they bought and sold.

The counsel for appellant here maintain that his patent is for the new article, and is not for the process, though he describes it fully, by which that article is produced. The appellees insist, with equal earnestness, that the patent is exclusively for the process by which the new oil is made.

The issue thus presented must be decided solely upon a correct construction of the plaintiff's patent, and the accompanying specifications, in which, as required by the act of Congress, he makes the statement of his invention.

No such question could have arisen if appellant had used language which clearly and distinctly points out what it is that he *claims* in his invention.

Opinion of the court.

We use the word claim as distinct from the word description. It must be conceded that the appellant's specification describes with minuteness and precision both the instrumentality and the process by which he makes the oil in question. And in regard to a part of the apparatus which he uses, he makes a distinct claim for its invention; and that is not in dispute here. He also describes with fullness and accuracy the process of distillation by which he produces this oil. He gives the temperature to be used; the mode of heating; the degree of rapidity or delay to be used in distilling; the introduction, and the advantage of that introduction, of superheated steam into contact with the oils to be distilled during the process.

He also describes, though in short terms, the article produced, the main feature of which he declares to be its freedom from the offensive odor which, before his invention, seemed to be an inseparable quality of those oils; and he mentions some of the more important uses to which this deodorized oil is applicable in the arts.

It is fairly to be inferred from this statement, that, if all which is described as new in these specifications is really so, the inventor has a right to a patent for three inventions:

1. For a modification or improvement in the distilling apparatus.
2. For a new process or mode of distilling heavy hydrocarbon-oils, by which they are deprived of their offensive odors.
3. For the product of this new process of distillation; namely: the deodorized heavy hydrocarbon-oils fitted for use in the arts.

When a man supposes he has made an invention or discovery useful in the arts and, therefore, the proper subject of a patent, it is, nine times out of ten, an improvement on some existing article, process or machine, and is only useful in connection with it. It is necessary, therefore, for him, in his application to the Patent Office, to describe that upon

Opinion of the court.

which he engrafts his invention, as well as the invention itself; and, in cases where the invention is a new combination of old devices, he is bound to describe with particularity all these old devices, and then the new mode of combining them, for which he desires a patent. It thus occurs that, in every application for a patent, the descriptive part is necessarily largely occupied with what is not new, in order to an understanding of what is new.

The Act of Congress, therefore, very wisely requires of the applicant a distinct and specific statement of what he claims to be new, and to be his invention. In practice, this allegation of the distinct matters for which he claims a patent comes at the close of the schedule or specification, and is often accompanied by a disclaimer of any title to certain matters before described, in order to prevent conflicts with pre-existing patents.

This distinct and formal claim is, therefore, of primary importance, in the effort to ascertain precisely what it is that is patented to the appellant in this case.

In this part of his application he makes two separate claims, the second of which relates to a modification of the distilling apparatus, and is not in dispute here. Turning our attention to the first claim, we are compelled to say that the language is far from possessing that precision and clearness of statement with which one who proposes to secure a monopoly at the expense of the public ought to describe the thing which no one but himself can use or enjoy, without paying him for the privilege of doing so. It is as follows:

"I claim the above described new manufacture of the deodorized heavy hydrocarbon-oils, suitable for lubricating and other purposes, free from the characteristic odors of hydrocarbon-oils, and having a slight smell like fatty oil, from hydrocarbon-oils, by treating them substantially as is hereinbefore described." The word manufacture in this sentence is one which is used with equal propriety to express the process of making an article, or the article so

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made. "The manufacture of hydrocarbon-oils" means primarily the making of hydrocarbon-oils. It may mean the thing made also. Are there other words in the sentence calculated to throw light on the meaning of this one?

"I claim the above described new manufacture of hydrocarbon-oils, * * * by treating them substantially as hereinbefore described." It seems to us that the most natural meaning of these words is, that "I claim this new mode of manufacturing hydrocarbon-oils, by treating them as hereinbefore described." This is the meaning which would first suggest itself to the mind. If the product is meant, the words "by treating them substantially as hereinbefore described" are useless. They are not only useless, but embarrassing; for, by the well settled rules of construing all instruments, some importance must be attached to them; and, if they are to be regarded at all, they must either refer to the process of making the oils, for which the applicant is claiming a patent, or they are intended to limit his claim for a patent for the product to that product only, when produced by treating the oils in the manner before described.

The counsel for appellant disclaim this latter construction, and allege that the patent covers the oil described, by whatever mode it may be produced. It is necessary to insist on this view because it is made to appear in the case that the oils sold by defendants were produced by a process very different from that described by appellant.

We can see no reason why the applicant for the patent, if he had in his mind a claim for the article produced, should have intended so to limit his claim. If the *article* was the discovery which he sought the exclusive right to make, use and sell, he was entitled to that monopoly, however produced.

If, however, he had in his own mind only a claim for the process of manufacture by which the article was made, then his reference to the mode of treating the oils from which it came was evidently proper and intelligible.

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But the language in the specifications aids us in construing the claim. In the sentence next preceding this claim, he says: "It will also be evident to those skilled in the art that *my invention* will be used, if the above mentioned process be worked, to produce the deodorized heavy oils above described from distilled hydrocarbon oils," etc. It is very clear that what he here calls his *invention* is a thing which produces the deodorized oils, and not the oil itself. So again he says: "From the above it will be obvious that my invention consists in *producing* heavy hydrocarbon-oils, suitable for lubricating and other purposes, and free from the characteristic odor, *by distilling from them the volatile matter from which objectionable odors arise.*" Again he says: "In carrying on my new manufacture of deodorizing heavy oils, with this apparatus, I place the oil to be deodorized in the still, and heat it by the fire beneath to the required temperature to commence the operation, the steam being shut off from the coil, and the outlet cock being opened to admit of the expulsion of any water from within the coil." Here the word "manufacture" is used in the sense of the word "process," a word which could be substituted for it, without a shade of change in the meaning. As it can here mean nothing else but process, we have a definition of the meaning to be attached to it in other parts of the same paper, if that meaning were otherwise doubtful.

But, apart from these verbal criticisms, all of which are just and tend strongly to show what was the invention claimed by appellant, it is impossible to read the four printed pages of specifications, in which appellant minutely describes his invention, without observing that they are almost wholly directed to the apparatus, the mode of using it, and the peculiar process of distillation, by which the more volatile parts of the heavy oils, which contain the offensive odors, are separated from the main body of the oil, pass over in that process, and leave the remainder free from this great drawback in its use in the arts. Why should this be so, if

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the applicant for the patent was only looking to the products as his invention, the deodorized heavy hydrocarbon-oils? If the oil alone was to be patented, by whatever process made, this elaborate description of one particular process was unnecessary.

A strong appeal is made by counsel to give the appellant the benefit of a liberal construction in support of the patent. Cases are cited in which this court has held that, rather than defeat a patent where it appears that a valuable invention has really been made, this court, giving full effect to all that is found in the application on which the Patent Office acted, will uphold that which was really invented, and which comes within any fair interpretation of the patentee's assertion of claim.

We are not disposed to depart from this rule in the present case. There is no question here but that the patent is good for the second claim, for the superheating coil, with its steam-pipe, etc.; and we are all of opinion that it is good for the process of distillation described in the specifications, by which the heavy hydrocarbon-oils are deodorized. It is, therefore, a valid patent for two important matters, well set forth and described. If the patentee is also entitled to a patent for the product of this distillation, and has failed, as we think he has, to obtain it, the law affords him a remedy, by a surrender and re-issue. When this is done, the world will have fair notice of what he claims,—of what his patent covers, and must govern themselves accordingly.

The growth of the patent system in the last quarter of a century in this country has reached a stage in its progress where the variety and magnitude of the interests involved require accuracy, precision and care in the preparation of all the papers on which the patent is founded. It is no longer a scarcely recognized principle, struggling for a foothold, but it is an organized system, with well settled rules, supporting itself at once by its utility and by the wealth which it creates and commands. The developed and im-

Notes and Citations.

proved condition of the patent law, and of the principles which govern the exclusive rights conferred by it, leave no excuse for ambiguous language or vague descriptions. The public should not be deprived of rights supposed to belong to it, without being clearly told what it is that limits these rights. The genius of the inventor, constantly making improvements in existing patents, a process which gives to the patent system its greatest value, should not be restrained by vague and indefinite descriptions of claims in existing patents from the salutary and necessary right of improving on that which has already been invented. It seems to us that nothing can be more just and fair both to the patentee and to the public, than that the former should understand and correctly describe just what he has invented, and for what he claims a patent. 1)

In consistency with these views, we are of opinion that the appellant in this case has described and claimed a patent for the process of deodorizing the heavy hydrocarbon oils, and that he has not claimed as his invention the product of that process.

The judgment of the Circuit Court is affirmed.

Mr. Justice CLIFFORD, dissenting:

I dissent from the opinion and judgment in this case, upon the ground that the invention, when the claim is properly construed, is an invention of the described new manufacture, and not, merely for the process, as decided by a majority of the court.

94 U. S. 573-574.

Notes:

2. Particular patents construed to be for machines and not processes:

Le Roy v. Tatham, 14 How. 156 [5 Am. & Eng. 313].

Corning v. Burden, 15 How. 252 [6 Am. & Eng. 69].

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Notes and Citations.

Railroad v. Du Bois, 12 Wall. 47 [8 Am. & Eng. 433].
Grier v. Wilt, 120 U. S. 412.

As to process and product see:

Powder Co. v. Powder Works, 98 U. S. 126.

9. The claim should be construed most favorably for the patentee:

Corning v. Burden, 15 How. 252 [8 Am. & Eng. 69].

Winans v. Denmead, 15 How. 330 [6 Am. & Eng. 107].

Railway Co. v. National Car Brake Co., 110 U. S. 229.

Yale Lock Mfg. Co. v. Sargent, 117 U. S. 536.

Remedy for failure to claim the entire invention is by reissue:

Keystone Bridge Co. v. Iron Co., 95 U. S. 274 [p. 364 *post.*]

Patent in suit:

No. 90,284. Merrill, J. May 18, 1869. Hydrocarbon Oil.

OTHER SUITS ON SAME PATENT:

Merrill v. Yeomans, 1874. 1 Holmes, 331; 1 Ban. & Ard. 47; 5
O. G. 267.

Notes and Citations.

Cited :

IN SUPREME COURT IN :

Keystone Bridge Co. v. Phoenix Iron Co., 1877. 95 U. S. 274;
Bk. 24 L. ed. 344 [p. 364 *post*].
Duff v. Sterling Pump Co., 1883. 107 U. S. 636; Bk. 27 L. ed. 517.
Mahn v. Harwood, 1884. 112 U. S. 354; Bk. 28 L. ed. 665.
Rowell v. Lindsay, 1885. 113 U. S. 97; Bk. 28 L. ed. 906.

IN CIRCUIT COURTS IN:

Cone v. Morgan Envelope Co., January, 1879. 4 Ban. & Ard. 107.
Gottfried v. Philip Best Brewing Co., December, 1879. 5 Ban. &
Ard. 4.
Knox v. Quicksilver Mining Co., October, 1880. 4 Fed. Rep. 809.
Abbott v. Hoole Mnfg. & Baggage Check Co., February, 1885. 31
O. G. 1561.
Polsdorfer v. St. Louis Wooden-Ware Works, May, 1888. 37 Fed.
Rep. 57.

IN DECISIONS OF COMMISSIONER OF PATENTS IN:

Designolle, November, 1877. 13 O. G. 227.
Anders v. Gilliland, November, 1880. 19 O. G. 177.
Ex parte Skinner, March, 1881. 19 O. G. 662.

IN TEXT-BOOKS:

Walker on Pats., 1883, p. 104.

Oct., 1876.]

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NATHAN C. RUSSELL, APPELLANT, v. ISAAC V.
PLACE ET AL.*

94 (4 Otto) U. S. 606-610. Oct. Term, 1876.

[Bk. 24, L. ed. 214; 12 O. G. 53.]

Argued December 12, 1876. Decided April 16, 1877.

Former judgment. Estoppel. Record. Evidence.

- † 1. A judgment of a court of competent jurisdiction, upon a question directly involved in one suit, is conclusive as to that question in another suit between the same parties; but to this operation of the judgment it must appear, either upon the face of the record, or be shown by extrinsic evidence, that the precise question was raised and determined in the former suit. If there be any uncertainty on this head in the record, the whole subject matter of the action will be at large and open to a new contention, unless this uncertainty be removed by extrinsic evidence showing the precise point involved and determined. To apply the judgment, and give effect to the adjudication actually made, when the record leaves the matter in doubt, such evidence is admissible. (p. 230.)
- † 2. In an action at law for damages for the infringement of a patent for an alleged new and useful improvement in the preparation of leather, which patent contained two claims; one for the use of fat liquor generally in the treatment of leather, and the other for a process of treating bark-tanned lamb or sheep-skin, by means of a compound composed and applied in a particular manner, the declaration alleged, as the infringement complained of, that the defendants had made and used the invention, and caused others to make and use it, without averring whether such infringement consisted in the simple use of fat liquor in the treatment of leather, or in the use of the process specified. *Held*, that the judgment recovered in the action does not estop the defendant in a suit in equity by the same plaintiff, for an injunction and an accounting for gains and profits, from con-

* See Explanation of Notes, page III.

† Head notes by Mr. Justice FIELD.

Argument of counsel.

testing the validity of the patent, if not appearing by the record, and not being shown by extrinsic evidence, upon which claim the recovery was had. The validity of the patent was not necessarily involved, except with respect to the claim which was the basis of the recovery; a patent may be valid as to a single claim, and invalid as to the others. (p. 231.)

- † 3. If, upon the face of a record, anything is left to conjecture as to what was necessarily involved and decided, there is no estoppel in it when pleaded, and nothing conclusive in it when offered as evidence. (p. 232.)

[Citations in the Opinion of the Court:]

Steam Packet Co. v. Sickles, 24 How. 333. p. 230.

Steam Packet Co. v. Sickles, 5 Wall. 580 [7 Am. & Eng. 454.] p. 231.

Aiken v. Peck, 22 Vt. 255. p. 232.

Hooker v. Hubbard, 102 Mass. 239. p. 232.

Appeal from the Circuit Court of the United States for the Northern District of New York.

The appellant was the complainant in the court below, where a decree was rendered dismissing his bill; whereupon he appealed to this court. For an opinion upon the validity of the patent in question, see *Russell v. Dodge*, 93 U. S. 460 [10 Am. & Eng. 495]

The case is stated by the court.

Mr. Horace E. Smith, for appellant:

The judgment or decree of a court possessing competent jurisdiction is, as a general rule, final not only as to the subject-matter thereby actually determined, but as to every other matter which the parties might have litigated in the cause, and might have decided.

If there are exceptions to this rule in special cases, the suit at bar does not come within them.

Gould v. R. R. Co., 91 U. S. 526, decided by this court in March, 1876; see 13 Alb. L. J. 214; *Embury v. Conner*, 3 N. Y. 512; *Sickles v. Mitchell*, 3 Blatchf. 552; *Sickles v. Youngs*, 3 Blatchf. 297; *Parker v. Brant*, 1 Fish. 58; *Birck-*

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head v. Brown, 5 Sandf. 134; Dows v. McMichael, 6 Paige, 139.

In the exceptional cases where evidence is admissible to show what issues were tried and decided, where a given question is fairly embraced in the proceedings, the presumption is that it was litigated and decided. The burden is on the party resisting the estoppel, to show the contrary by parol proof or other competent evidence.

Burwell v. Knight, 51 Barb. 267; Wood v. Jackson, 8 Wend. 9; Gould v. R. R. Co. (*supra*).

Mr. T. L. Wakefield, for appellees:

An estoppel is an admission or determination under circumstances of such solemnity that the law will not allow a fact so admitted or established to be afterwards drawn in question between the same parties or their privies, and relates only to issues of fact, and not of law.

Burlen v. Shannon, 99 Mass. 200; Steam Packet Co. v. Sickles, 24 How. 333, S. C. 5 Wall. 580 [7 Am. & Eng. 454]; 2 Smith L. C. 573, *et seq.*; Outram v. Morewood, 3 East, 346; Queen v. Hartington, 4 El. & Bl. 780.

Who are privies?

1 Greenl. Ev. 12th ed., p. 559.

2. A verdict and judgment are not conclusive unless it appears by the record, or by parol evidence in addition thereto, that the prevailing party in the former suit prevailed upon the very issue in support of which he offers the record in evidence; and when it is left doubtful upon which of two grounds the successful party prevailed in such former suit, such record or determination will not operate as an estoppel.

McDowell v. Langdon, 3 Gray, 513; Burlen v. Shannon, 99 Mass. 204; S. C. 3 Gray, 387; S. C. 14 Gray, 433.

Mr. Justice FIELD delivered the opinion of the court:

This is a suit for an infringement of a patent to the com-

Opinion of the court.

plainant, for an alleged new and useful improvement in the preparation of leather, and is similar in its general features to the suit of the complainant against Dodge, recently decided. It is submitted upon substantially the same testimony, and presents, with one exception, the same questions for determination. That exception relates to the operation, as an estoppel against setting up the defences here made, of a judgment recovered by the complainant against the defendants in an action at law for the infringement of the patent.

The bill of complaint sets forth the invention claimed; the issue of a patent for the same; its surrender for alleged defective and insufficient description of the invention; its reissue with an amended specification, and the recovery of judgment against the defendants for damages in an action at law for a violation of the exclusive privileges secured by the patent.

The bill then alleges the subsequent manufacture, use and sale by the defendants, without the license of the patentee, of the alleged invention and improvement, and prays that they may be decreed to account for the gains and profits thus acquired by them, and be enjoined from further infringement.

The answer admits the issue of the patent, its surrender and re-issue, and, as a defence to this suit, sets up in substance the want of novelty in the invention, its use by the public for more than two years prior to the application for the patent, and that the re-issue, so far as it differs from the original patent, is not for the same invention. The answer also admits the recovery by the complainant in the action at law of the judgment mentioned, but denies that the same issues were involved or tried in that action which are raised in this suit.

The action at law was brought in the Circuit Court of the United States for the Northern District of New York, in the ordinary form of such actions for infringement of the privileges secured by a patent. The defendants pleaded the gen-

Opinion of the court.

eral issue, and set up, by special notice under the Act of Congress, the want of novelty in the invention, and its use by the public for more than two years prior to the application for a patent. The plaintiff obtained a verdict for damages, upon which the judgment mentioned was entered ; and this judgment, it is now insisted, estops the defendants in this suit from insisting upon the want of novelty in the invention patented, and its prior use by the public, and also from insisting upon any ground going to the validity of the patent which might have been availed of as a defence in that action and, of course, upon the want of identity in the invention covered by the re-issue with that of the original patent.

It is undoubtedly settled law that a judgment of a court of competent jurisdiction, upon a question directly involved in one suit, is conclusive as to that question in another suit between the same parties. But to this operation of the judgment it must appear, either upon the face of the record or be shown by extrinsic evidence, that the precise question was raised and determined in the former suit. If there be any uncertainty on this head in the record—as, for example : if it appear that several distinct matters may have been litigated, upon one or more of which the judgment may have passed, without indicating which of them was thus litigated, and upon which the judgment was rendered—the whole subject-matter of the action will be at large, and open to a new contention, unless this uncertainty be removed by extrinsic evidence showing the precise point involved and determined. To apply the judgment, and give effect to the adjudication actually made, when the record leaves the matter in doubt, such evidence is admissible.

Thus, in the case of the Washington, Alexandria & Georgetown Steam Packet Co. v. Sickles, reported in the 24th of Howard, a verdict and judgment for the plaintiff in a prior action against the same defendant on a declaration, containing a special count upon a contract, and the common counts, was held by this court not to be conclusive of the existence

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and validity of the contract set forth in the special count, because the verdict might have been rendered without reference to that count, and only upon the common counts. Extrinsic evidence showing the fact to have been otherwise was necessary to render the judgment an estoppel upon those points.

When the same case was before this court the second time, *Packet Co. v. Sickles*, 5 Wall. 580 [7 Am. & Eng. 454], the general rule with respect to the conclusiveness of a verdict and judgment in a former suit between the same parties, when the judgment is used in pleading as an estoppel, or is relied upon as evidence, was stated to be substantially this: that, to render the judgment conclusive, it must appear by the record of the prior suit that the particular matter sought to be concluded was necessarily tried or determined; that is, that the verdict in the suit could not have been rendered without deciding that matter; or it must be shown by extrinsic evidence, consistent with the record, that the verdict and judgment necessarily involved the consideration and determination of the matter.

Tested by these views, the question presented by the plaintiff in this case, upon the effect as evidence of the verdict and judgment in the action at law, is of easy solution. The record of that action does not disclose the nature of the infringement for which damages were recovered. The declaration only avers that the plaintiff was the original and first inventor of a new and useful improvement in the preparation of leather, and that he obtained a patent for the same and, on its surrender, a new patent, with an amended specification, without describing with other particularity the nature and operation of the invention; and alleges, as the infringement complained of, that the defendants have made and used the invention, and have caused others to make and use it. The patent contains two claims: one for the use of fat liquor generally in the treatment of leather, and the other for a process of treating bark-tanned

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lamb or sheep-skin by means of a compound composed and applied in a particular manner. Whether the infringement for which the verdict and judgment passed consisted in the simple use of fat liquor in the treatment of leather, or in the use of the process specified, does not appear from the record. A recovery for an infringement of one claim of the patent is not of itself conclusive of an infringement of the other claim, and there was no extrinsic evidence offered to remove the uncertainty upon the record; it is left to conjecture what was in fact litigated and determined. The verdict may have been for an infringement of the first claim; it may have been for an infringement of the second; it may have been for an infringement of both. The validity of the patent was not necessarily involved, except with respect to the claim which was the basis of the recovery. A patent may be valid as to a single claim and not valid as to the others. The record wants, therefore, that certainty which is essential to its operation as an estoppel, and does not conclude the defendants from contesting the infringement or the validity of the patent in this suit.

The record is not unlike a record in an action for money had and received to the plaintiff's use. It would be impossible to affirm from such a record, with certainty, for what moneys thus received the action was brought, without extrinsic evidence showing the fact; and, of course, without such evidence the verdict and judgment would conclude nothing, except as to the amount of indebtedness established.

According to Coke, an estoppel must "be certain to every intent;" and if upon the face of a record anything is left to conjecture as to what was necessarily involved and decided, there is no estoppel in it when pleaded, and nothing conclusive in it when offered as evidence. See *Aiken v. Peck*, 22 Vt. 260, and *Hooker v. Hubbard*, 102 Mass. 245.

The decree is affirmed.

Dissenting, Mr. Justice CLIFFORD.

Notes and Citations.

Patent in suit:

No. 93,910. Russell, N. C. August 17, 1869. Reissue
No. 3,816. February 1, 1870. Preparation of
Leather.

OTHER SUITS ON SAME PATENT :

Russell v. Klein, 1874. 19 Wall. 433 [9 Am. & Eng. 244].
Russell v. Place, 1877. 9 Blatch. 173.
Russell v. Dodge, 1877. 93 U. S. 460 [10 Am. & Eng. 495].

Cited :

IN CIRCUIT COURTS IN :

Radford v. Folsom, June, 1880. 3 Fed. Rep. 199.
The Tubal Cain, November, 1881. 9 Fed. Rep. 834.
Merchants' Internat. Steamboat Line v. Lyon, May, 1882. 4 Mc-
Creary, 145; 12 Fed. Rep. 63.
Kelly v. Milan, October, 1884. 21 Fed. Rep. 842.
Fife v. Bohlen, January, 1885. 22 Fed. Rep. 878.
Lippincott v. Shaw Carriage Co., November, 1885. 25 Fed. Rep.
577.
Hughes v. Dundee Mortgage Invest. Co., March, 1886. 26 Fed. Rep.
831.
Steam Gauge & Lantern Co. v. Meyrose, March, 1886. 27 Fed.
Rep. 213; 36 O. G. 1477.
Oregonian R. Co. v. Oregon R. & Nav. Co., April, 1886. 27 Fed.
Rep. 277.
The Holladay Case, June, 1886. 27 Fed. Rep. 830.

Notes and Citations.

IN TEXT BOOKS:

2 Abb. Pat. Laws, 1886, p. 298.

Walker on Pats., 1883, p. 127.

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CAWOOD PATENT.

THE ILLINOIS CENTRAL RAILROAD COMPANY, APPELLANT,
v. SAMUEL H. TURRILL; THE MICHIGAN SOUTHERN AND
NORTHERN INDIANA RAILROAD COMPANY, APPELLANT,
v. SAMUEL H. TURRILL; THE CHICAGO AND ALTON RAIL-
ROAD COMPANY, APPELLANT, v. SAMUEL H. TURRILL;
THE CHICAGO, BURLINGTON AND QUINCY RAILROAD COM-
PANY, APPELLANT, v. SAMUEL H. TURRILL; THE PITTS-
BURGH, FORT WAYNE AND CHICAGO RAILWAY COMPANY,
APPELLANT, v. SAMUEL H. TURRILL.

94 (4 Otto) U. S. 695-711. Oct. Term. 1876.

[Bk. 24, L. ed. 238; 12 O. G. 709].

Argued March 28, 29, 1877. Decided April 23, 1877.

*Particular patent construed. Infringement. Novelty—how de-
termined. Invention. Accounting for infringement.*

1. Letters patent No. 15,687, J. D. Cawood, September 9, 1865, Anvil 1 Wall. 491 [7 Am. & Eng. 202], further construed, *held* novel and not anticipated by the insufficient description in the prior English patent to Church of 1846. The claim as limited in view of the state of the art, *held* not infringed by the Beebee & Smith, the Bayonet and the Michigan Southern machines, but infringed by the Whitcomb, Etheridge and Illinois Central machines. (p. 245.)
2. The words "or in any other convenient manner" construed to mean, by means adapted to the work the machine is intended to perform. (p. 253.)
3. That the omission of certain elements in a prior patented machine might enable a mechanic to alter and employ the remnant like the infringed machine, is no test of the novelty of the latter, this is to be determined by the question whether the information necessary to construct and use the latter machine can be read out of the prior specification, by a mechanic skilled in the particular art to which the alleged anticipated machine relates. (p. 254.)

Statement of the case.

4. Because the invention has been used in an imperfect condition, or altered slightly in one particular without serious loss, it is no proof that it was no invention, or that the use of it in its altered condition was no infringement. (p. 259.)
5. In settling an account for an infringement the question is not what profits the infringer has made in his business or from his manner of conducting it, but what advantage he has derived from the use of the infringed invention. (p. 261.)

[Citations in the opinion of the court:]

Turrill v. Railroad Co., 1 Wall. 491 [7 Am. & Eng. 202.] p. 245.

Appeals from the Circuit Court of the United States for the Northern District of Illinois.

The bill in each of these cases was filed in the court below by the appellee, to recover for the alleged infringement of a certain patent. Decrees having been entered in his favor the respondents in each case took an appeal to this court.

The case is fully stated by the court.

The specifications and drawings of the Cawood patent are as follows:

JOSEPH D. CAWOOD, OF MARSHALL, MICHIGAN.

Letters Patent No. 15,687, dated September 9th, 1856.

The schedule referred to in these Letters Patent, and making part of the same.

To all whom it may concern:

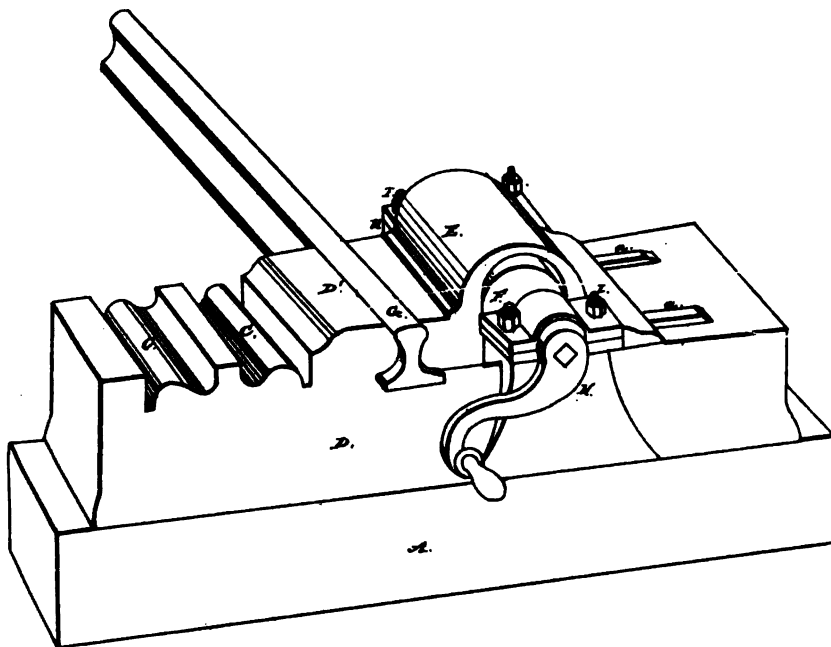
Be it known that I, Joseph D. Cawood, of the town of Marshall, county of Calhoun, and State of Michigan, have invented a new and useful improvement in the common anvil or swedge-block, for the purpose of welding up and reforming the ends of railroad rails, when they have exfoliated or become shattered from unequal wear, occasioned

J.D. Cawood.

Railroad Track Iron.

N^o 15,687.

Patented Sept 9, 1856.



Statement of the case.

by the inequalities of the road (six inches or so of the extreme end of the rail being frequently destroyed, while the remainder is perfectly sound), and I do hereby declare that the following is a full, clear and exact description of the construction and operation of the same, reference being had to the annexed drawing, making a part in this specification and giving a perspective view of the machine. A, representing the bed-sill on which the anvil is placed. B, the anvil or swedge-block of cast-iron ; CC, recesses or dies across the face, the shape of the side of the rail D, solid block making a part of anvil, with its side shaped to the side of rail, while placed in its natural position ; E, a movable press-block, held down to anvil by dovetail tongues *a*, on the anvil and grooves in the movable press-block, and operated by two eccentric cams, F, back and forth in a longitudinal direction, to press the rail together while forming its end, and with sufficient travel to extricate the rail without altering its vertical position. G, a rail of the T form, in its position between the press-blocks.

I usually make my improved anvil and swedge-block of cast iron, between four and five feet long and sixteen inches wide across the face, with two forms or recesses, *cc*, at one end, right and left, of a form corresponding with the side of the rail ; close to these is cast a raised block, D, nearly as high as the rail, and with its farthest edge also shaped to fit the side of the rail when it lies across the anvil in its natural position. Next this, I attach the face of the anvil, by dovetail tongues and grooves or any other convenient manner ; what I call a movable press-block, E, with a similar but reverse shaped edge, lying opposite to the other so as to enclose the rail between the two, as in the jaws of a vise. This block I work by two eccentric cams, F, on a shaft which is attached to the anvil by two standards, HH, with bearings, II, either cast on or bolted to the edge of the same, so that half a turn of the crank will move the press block over a space a little more than the extreme width of the rail. The mode of using this machine is extremely

Argument of counsel.

simple and effective. A piece of iron (being of a size suitable to the deficiency of the rail) having been prepared and put in the fire, the rail being suspended by its middle to the level of the anvil, is brought to a welding heat, and then swung round from the fire into the space between the two blocks, where it is by a half turn of the crank pinched together by means of the cams, F, the welding piece is then laid on the top of the rail and welded to the rail, in the usual way, and leveled up and shaped by a swedge, held by the smith, of the form of that section which projects above the blocks—thus accomplishing at one heat what usually requires three or more. Should any imperfections remain, which is not usual if the first operation is properly gone through with, they can be removed by proper hand swedges, after placing the rail in the recesses, CC, for that purpose.

I do not claim the anvil block nor its recesses, but what I do claim as my invention and desire to secure by letters patent, is the movable press block, E, having its edge formed to the side of the rail, G, in combination with another block, D, with its edge of a similar but reversed form (the movable blocks to be operated by two cams or in any other convenient manner) for the purposing of pressing between them a T, or otherwise shaped rail, thereby greatly facilitating the difficult operation of welding and renewing the ends of such rails after they have been damaged in the manner herein described and set forth.

JOSEPH D. CAWOOD.

Witnesses:

GEORGE JOHNSON,
JAMES A. WAY.

Messrs. George Gifford, George Paysen, John B. Niles and John N. Jewett, for appellants:

This court stated that the Cawood machine was not limited to any particular shape or configuration of the edges or faces of the blocks, thus: "shape of the rail is immaterial,

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except that the inner face or edge of the respective blocks must be so made and formed as to fit the respective sides of the rail to be repaired."

The specification of the Cawood patent agrees with the statement of this court as to what the Cawood machine consisted of. Leaving the subject there there would be no difficulty in seeing that the angle iron machine is within and invalidates the Cawood patent.

The appellee, by claiming that the Beebe and Smith machine infringes his patent, has positively refused to accept the construction put upon it by this court. The construction given to the patent by the appellee himself in prosecuting this machine as an infringement totally ignores any limitation to the fixed anvil or bed-plate by which the blocks or jaws are supported; or any limitation to a fixed block or jaw on an anvil or bed-plate, or any limitation to a movable block or jaw sliding upon an anvil or bed-plate; or any limitation to any means by which a block or jaw is attached to an anvil or bed-plate; or any limitation to one block or jaw being fixed and the other movable; or any limitation to a means or any means by which a block or jaw is moved or any limitation to any means of pressing the block or jaw against a rail; or any limitation to the kind of motion to be given to a block or jaw, and yet this machine was claimed to be an infringement and so decided by the court below.

A patentee is bound by a construction which he gives his patent claiming a thing to be an infringement of it. *Providence Rubber Company v. Goodyear*, 9 Wall. 799 [8 Am. & Eng. 150].

A patentee cannot be allowed to sue for the use of a machine, and then, if such a machine be proved to be old, deny that it is within his patent. Such would be denying the truth of his own allegation.

The Circuit Court, in its opinion in 1867, stated that the patent was for an "improvement on the common anvil or swedge-block," and repeated the same thing in its opinion

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of 1871. Now, where in the appellants' machines, such as the Beebe and Smith machines, the Bayonet vise, the Michigan Southern, and others, is there the *common anvil or swedge-block*? Where in any of those machines is there the *thing* which Cawood improved? Cawood did not invent, and no one pretends that he invented, the *substitute* for the common anvil or swedge-block. He *improved* a thing and *that thing* was the common anvil or swedge-block.

Judge Drummond in the Circuit Court says: "The Bayonet machine was one form of a common vise, operated by a treadle and elastic spring.

Machines used for similar work cannot be more unlike each other than the Cawood machine as described in the patent, and most of the appellant's machines. Comparison of their parts shows them to be not only different but that they actually have no similarity. Take, for instance, the Beebe and Smith, or the Bayonet vise, or the Michigan Southern. Neither of these machines has even a single part in common with the Cawood patented machine, as the patent has been construed by the courts. Neither of these machines in any sense is what Cawood and all the courts and the appellee's counsel declared the patented machine to be, an *improved anvil or swedge-block*.

It has often been decided that an infringer is not liable to the full extent of his profit, but is only liable for the advantage accrued exclusively from the infringing article or process; that is, only for the advantage derived from using the invention, over and above any advantage which he might have derived from any other mode of procedure not employing the invention.

Mowry v. Whitney, 14 Wall. 620 [9 Am. & Eng. 1]; Jones v. Morehead, 1 Wall. 155 [7 Am. & Eng. 165]; Livingston v. Woodworth, 15 How. 546 [6 Am. & Eng. 167]; Seymour v. McCormick, 16 How. 480 [6 Am. & Eng. 200].

The patent is invalid for want of novelty. This is the first and leading point in the case, and is urged by appellants with undoubting confidence. We believe that the

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court, on seeing the proofs, will agree with us that there was no invention in the Cawood machine. It is clear that the most that can be claimed is that it is an adaptation—a very slight adaptation. Though I do not admit, as to the angle-iron machine that we require even the slightest adaptation of that to fit it for mending the angle-iron rail.

Messrs. Charles M. Reed, Walter Curtis, and Edwin W. Stoughton, for appellee:

(A brief of B. R. Curtis, in the court below, being also filed here).

The invention of Cawood is well described in his specification, and illustrated in his drawings, and has been clearly defined by this court in *Turrill v. Railroad*, 1 Wallace, 511 [7 Am. & Eng. 202].

The invention is, in the specification, stated to be “an improvement in the common anvil or swedge-block, for the purpose of welding out and reforming the ends of railroad rails, when they have exfoliated or become shattered from unequal wear.”

The swedge-block thus improved was well known and had been used for the reparation of rails for several years. The differences between the original swedge-block and the improved are many and striking.

It was an idea and a purpose never, so far as the proof discloses, previously conceived by any other person, as is admitted, never practically accomplished until the machine of Cawood was produced.

It is also conceded that no machine existed at the date of his invention capable, without alteration, of doing the same thing; and it is not denied that to alter and adapt either of the machines or devices set up as defences, so as to make them capable of holding railroad bars, and of preserving their form during the process of reparation, would be to destroy them utterly for the several purposes for which such machines were originally designed.

The law is well settled that when a description of a prior

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machine is relied upon to defeat a patent subsequently granted, it must so describe a patented invention, as to operate in all substantial respects as a specification, and where the existence of a prior machine is relied upon to invalidate such patent, it must be capable without substantial alteration of accomplishing the same result by the same mode of operation as the patented machine. And where by a change in a prior machine, it is made capable of accomplishing a new and useful result which could not before be attained by it, that alone is evidence of a material change. A mere change of form is not patentable, but *any* change which produces a new and useful result is.

The infringement, which was admitted in the case tried at law before Judges DAVIS and DRUMMOND, is, without argument or other proof, apparent from a mere inspection of the machines. As soon as the invention was made by Cawood, it was adopted by most of the railway companies throughout the west. It was the first and for many years has been the only machine of any account capable of being used for that purpose, and has long afforded the only practicable means by which the Fish rail could be repaired. Under these circumstances courts do not struggle to give to the patent a construction less narrow than the length and breadth of the invention itself, and this, in its scope, takes in every variety of machines used by either of the defendants to this controversy. A test of this may be found, not merely in the construction and mode of operation of each and all of them, but in the fact that no attempt has been made, by proof, to distinguish one from the other in the manner in which they operate, to produce the desired result. Differences in form of the jaws are to be found—differences in the means employed to operate them, but none whatever which are substantial, and really none which a skilful mechanic might not employ with the Cawood machine before him. That in the form in which it was first produced and patented was complete, and to this hour has not been substantially improved, either in economy of con-

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struction or in efficiency or excellence of operation. This is a remarkable fact and distinguishes this invention from most others, for it rarely, if ever, happens that a first machine widely demanded in aid of a great industry and generally introduced, has held its supremacy so long without an improvement, and without a rival.

Mr. Justice STRONG delivered the opinion of the court:

These five cases may very conveniently be considered together, since they all present in the main the same questions.

The Cawood patent, for alleged infringements of which the suits were brought, has heretofore been the subject of consideration in this court, where it has been at least partially construed, and its limits have been defined. *Turrill v. R. R. Co.*, 1 Wall. 491 [7 Am. & Eng. 202]. It is a patent "for an alleged new and useful improvement in the common anvil or swedge-block, for the purpose of welding up and re-forming the ends of railroad rails when they have exfoliated or become shattered from unequal wear." Such is the general description given by the patentee in his specification, followed by a more detailed one, which needs careful consideration in order to discover what the invention claimed distinctively was. The patentee refers to an annexed drawing, made a part of the specification, and claimed as giving a perspective view of the machine or invention. It represents a bed-sill on which is placed an anvil or swedge-block of cast-iron, across the face of which there are recesses or dies shaped like the side of the rail to be repaired. A solid and fixed block, cast as a part of the anvil, is also represented, with its side face shaped to the side of the rail when placed in its natural position, and a movable press-block held down upon the anvil by dovetailed tongues and grooves, and operated by two eccentric cams, moving it back and forward, toward and from the fixed block. The face of the movable block is also shaped to fit the side of

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the rail next to it, and the two blocks grasp the rail on each side while its ends are being re-formed, the movable one having sufficient travel to allow the rail to be extricated without altering its vertical position. A rail of the T form is also represented in position between the two press-blocks. Having thus exhibited his invention by the drawing, the patentee proceeds to describe how he usually makes it, and the manner of its use. After having stated that he usually makes his improved anvil and swedge-block between four and five feet long, and sixteen inches wide across the face, with two forms or recesses at one end, right and left, of a form corresponding to the sides of the rail, he adds:

“Close to these is a cast or raised block nearly as high as the rail, and with its fartherest edge also shaped to fit the sides of the rail, when it lies across the anvil in its natural position. Next this (says he) I attach to the face of the anvil, by dovetailed tongues and grooves, or in any other convenient manner, what I call a movable press-block with a similar but reversed shaped edge, lying opposite the other, so as to inclose the rail between the two, as in the jaws of a vise. The blocks I work by eccentric cams on a shaft which is attached to the anvil by two standards, with bearings either cast on or bolted to the edge of the same, so that half a turn of the crank will move the press-block over a space a little more than half the width of the rail.”

The mode of use is then described. The rail and the piece of iron to be welded on having been heated, the former is swung from the fire into the space between the blocks, when, by half a turn of the cams, the blocks are closed upon it. The welding piece is then laid on top of the rail and leveled up by a swage held by the smith, of the form of that section which projects above the blocks. Such is the description. It is succeeded by the claim, as follows:

“I do not claim the anvil-block nor its recesses, but what I do claim as my invention, and desire to secure by letters patent, is the movable press-block, having its edge formed

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to the sides of the rail in combination with another block with its edge of a similar but reversed form (the movable block to be operated by two cams or in any other convenient manner), for the purpose of pressing between them a T or otherwise shaped rail, thereby greatly facilitating the difficult operation of welding and renewing the ends of such rails after they have been damaged, in the manner herein described and set forth."

What, then, in view of this specification and claim, was the invention patented? In *Turrill v. R. R. Co.*, 1 Wall. 491 [7 Am. & Eng. 202], this court declared it to be "Such a movable press-block as is described, having its edge formed to the side of the rail, in combination with such other block as is described, with its edge of similar but reversed form, arranged as described, and combined and operating in the particular way described, for the special purpose of effecting the desired result." This was enough for that case as it then appeared. But the present case requires a more minute analysis. Viewing the claim as interpreted by the preceding description, to which it refers, and by the drawing, it is not difficult to discover what the patentee supposed he had invented. It was not any kind of movable press-block combined and operating in any way with any kind of fixed block, to effect any useful result. His avowed purpose was to form a mechanism for welding up and reforming the ends of exfoliated and crushed rails, or, rather, to hold them in a convenient position for such welding and reforming, at the same time preserving their shape. His manner of accomplishing this result was evidently considered by him as of the very essence of his invention. On one side of the rail, when on the anvil, it is to be supported by a fixed block, part of the anvil itself, shaped reversely so as to fit the shape of the rail, and on the other it is to be supported and held in place by a movable block with the face adjusted to the shape of the rail on that side; the movable block capable of advance towards the fixed block,

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and of retrogradation after the rail is placed on the anvil. The rail is also, when in place, to be supported under its base by the anvil. This is fairly deducible from the manifest purpose of the inventor, from his drawing, and from his specification. It is necessary to the result supposed to have been obtained, for, unless supported at the base, the heated end of the rail would be in danger of being driven downward between the blocks by the blows of the sledge or hammer used in welding, while the part of the rail not operated upon, being cooler, would remain suspended between the blocks. And that the invention contemplates a bottom support for the rail on the anvil is made clear by the drawing. That shows no space between the anvil and the base of the rail. On the contrary, it exhibits a bottom support on the anvil, as well as lateral support by the modeled faces of the two blocks. The rail is thus confined on three of its sides, as in a mold. And the words of the specification, fairly construed, convey the same meaning. Thus, it is said the fixed block is cast nearly as high as the anvil, with its farthest edge shaped to fit the side of the rail, when it lies across the anvil in its natural position. The rail, then, is to lie upon the anvil, having the anvil as a bottom support. Unless it does, the shaped edge of the blocks cannot fit its side.

Having thus endeavored to ascertain what is the true idea of the patent, we are prepared to examine the devices which the appellants contend were in existence and use before Cawood made his invention. Of these there are three only that have been pressed upon our attention. The first is the angle-iron machine. Between this and the Cawood machine there are points of resemblance, but there are also very substantial differences. The purposes and objects sought to be accomplished by the machines are entirely unlike. It is always of importance to consider the object an inventor of a machine had in view, because thus the operation of its different parts and the functions performed by each can be better understood. The purpose of the angle-iron machine

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is to facilitate making angle-iron. That of the Cawood is to aid in mending rails already made. The angle-iron machine is a device to assist in welding together, at right angles with each other, two iron bars, making a fillet in the interior angle to strengthen the rail when made. To effect this, the fixed block on the anvil has necessarily a peculiar construction, unlike that in the Cawood machine. It is beveled or rounded off at the top of the face opposite the movable block, so as to give room for the formation of the fillet. Consequently, that face cannot answer reversely to the face of the movable block. And not only is the face of the fixed block uniformly and necessarily unlike that of the fixed block in the Cawood machine, but its function is entirely different. It is to furnish support for one of the two bars designed for the formation of the angle-iron. One entire limb of the angle-iron is laid upon top of the block, unconfin ed laterally, and there exposed to the hammer, the block being the anvil. The iron is thus left free to spread out in both directions instead of being prevented from spreading laterally by the press-block, as in the Cawood machine. There is nothing to preserve a shape already formed. The other bar of the angle-iron, or its other limb, hangs suspended from the upper edge of the fixed block, and is not supported against the blows of the hammer at any other part of its height than the under side of the limb which lies on the block, instead of being supported concurrently at two parts of its height by the grasp of the two blocks, and supported also under its base. In the Cawood machine, the hammering is not over the blocks or upon them, but exclusively on the rail between them. The fixed block in that is not cast quite so high as the rail, and the new piece is welded on and shaped, not on or over either block, but yet above the surface of that part of the anvil that constitutes the block. The patentee, after stating that the raised block of the anvil is cast "nearly as high as the rail" (the two blocks thus being made to support the under side of the

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crown of the rail, and confining the lower half of the crown laterally), says, "The welded piece is laid on top of the rail in the usual way, and leveled up and shaped by a swedge held by the smith, of the form of that section which projects above the blocks." Thus the iron is not permitted to spread laterally under the blows of the hammer over the pressed blocks and down between them. In fact, the blocks have nothing to do with the formation of that section of the rail that projects above them. It is very evident, therefore, that the fixed block in the angle-iron machine is not intended or adapted to perform the office which the fixed block does perform in the Cawood. In fact, it cannot perform it. Besides, in the angle-iron machine, no provision is made for a bottom support of a rail. The height of the blocks above the body of the anvil is not regulated with reference to any bottom support, and the bar between the jaws is held as in a vise. Support beneath the flange or base of the rail, when in place for reparation, is, as we have seen, a feature of the Cawood improvement. It would defeat the purposes and uses of the angle-iron machine. The bottom serves for an anvil in the Cawood, to resist the downward force of the blows on the top of the rail and to prevent forcing the heated iron into the neck of the rail and increasing its length. But one of the objects, and a result secured in the angle-iron machine, is increasing the length and width of that portion of the bar operated upon by the hammer—the part which lies upon the fixed block. There is also a wide difference in the functions of the movable blocks of the two machines. That of the angle-iron machine is principally to act as one of the jaws of a vise to hold the bar against the fixed block or raised part of the anvil, while the welding is being made and while the fillet is being formed in the interior angle. It is not to preserve the shape of an already formed rail, or to resist the lateral pressure caused by the hammering. Yet such are the functions of the Cawood movable block. We think, therefore, that if the purposes

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of the two devices be considered, as well as their possible modes of use, the arrangement of their several parts respectively to each other and the different functions of those parts, it cannot be held that the angle-iron machine contained the invention or involved the principle of the invention described in the patent granted to Cawood.

The second device, which the appellants insist anticipated the Cawood invention, is what is denominated the bayonet machine, used at the Springfield Armory before 1850 and since, for forging parts of bayonets. In some particulars there are resemblances between the devices; but there are obvious dissimilarities, not only in the purpose and results sought to be obtained, but in the relation of the parts to each other, in the work to be done by those parts, in the manner and effect of their combination and in their mode of operation. The differences are sufficient, in our opinion, to justify the conclusion that the machines are different devices embodying distinct principles. The bayonet machine is in form and in substance nothing but a hinge-vise, with a peculiar shape of the jaws, intended to facilitate operations upon the shank and socket of a bayonet. The jaws are fitted to hold the bayonet in place, while the shank is turned upward, through and above their upper surface, in order that a flat piece of iron may be welded upon the shank and prepared to be afterwards converted into a socket. The lateral surfaces of the jaws come into actual contact with each other, except for a short space, equal to the diameter of the bayonet shank. They hold only the lower segment of the shank, allowing the upper segment to project a considerable distance above the upper surface. The inner surfaces do not constitute a mold. They do not maintain the shape of the shank, inclosed within and between them during the process of top welding and shaping. They are intended for no such purpose, nor are they fitted for it. Their sole function appears to be to sustain the shaft of the bayonet in an upright position, while a flat piece of iron is being welded

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upon its end. It is only in a very limited sense that the machine can be called an anvil. One side of it is stationary, the upper portion of its front forming what may be called a fixed jaw. The other side, being merely an arm, vibrates upon a hinge or upon journals attaching it to the fixed side, at or near its base. Such are the leading features of the machine. Comparing them and the operation of the machine with those of the Cawood, it is very evident the devices are not substantially the same. The Cawood is an improved anvil, not a vise. It has a fixed block cast upon an anvil, and its movable block rests upon the anvil, attached to it, and moving towards and from the fixed block horizontally, in a plane parallel with the anvil's upper surface, instead of moving on the arc of a circle. The two blocks together form a mold, and they are combined with each other through the anvil. These are very substantial differences from the bayonet machine. The combination through the anvil is essential for the work intended to be done. It gives the immediate support of the anvil to the bottom of the rail, as its tread or crown is being hammered; while in the bayonet machine the iron inclosed is supported from beneath, during the process of welding, exclusively by the jaws, at a considerable distance from the point of connection between them. Again, in the Cawood, the inner surface of the blocks is designed and fitted to maintain the shape of the rail while it is hammered, an office not contemplated for the jaws of the bayonet machine. The bayonet socket is fashioned to its desired shape, after the release of the iron from the jaws. So, also, the relation of the blocks and jaws to the rail or iron, when in place to be operated upon, is different in the two machines. In the Cawood, the blocks come nearly to the top of the rail, affording lateral support to almost the whole of each side, while in the other there is no such lateral support. And the hammering is entirely between the blocks, instead of being partly over or upon them.

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Still another important difference is apparent. In the bayonet machine the movable jaw is pushed back by a spring interposed between the two arms of the vise, and forced forward by leverage sufficient to overcome the resistance of the spring, and hold it compressed while the jaws are in contact with each other. It is obvious that no such means of moving the movable block would answer for Cawood's machine. It is true he did not claim operating it by cams exclusively. He claimed moving the block by cams, or "in any other convenient manner;" but that meant by means adapted to the work the machine was intended to perform. These several differences are too many and too great to be considered merely formal. Not only the object of Cawood's device was novel, but so, also, were the functions of the blocks, their combination with each other, and the mode of operation. The general appearance of the bayonet machine and, as we have said, its distinctive character, was that of a vise. We think, therefore, it cannot be regarded as containing the principle embodied in the Cawood invention. We cannot think it could teach how to make the improvement in the common anvil or swage-block for reforming and welding the ends of railroad rails, which was devised by Cawood and which has gone into large use.

It is next contended that the patent was anticipated by the Church machine, patented in England in 1846. We have before us the specification, and a model constructed from that specification. It requires but little attention. It is described as a machine which may be usefully employed for straitening and flattening the rails for railways, as well as other similar uses. As the model represents it, the machine is totally incapable of performing the work of the Cawood machine. It is not an anvil. There is no fixed block cast as a part of an anvil. There is a stationary die, part of a frame against which one side of the rail is placed, to resist the lateral pressure exerted upon it by a sliding lateral die on the other side of the rail, and above is a hori-

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zontal bar which is forced downwards by a series of jointed levers, carrying another die upon the upper surface of the rail. It is plain this description and this model could never have informed any one of the device Cawood invented. It does not show how the blocks or jaws can be combined so as to leave the upper face of the rail, to be repaired, exposed for the action of a swage and a hammer. It is said, however, if the upper horizontal bar with its die and jointed levers were taken away, a mechanic might understand how the remnant could be altered and employed as a Cawood machine is employed, and for the same uses. That, however, evades the question to be answered, which is, whether the specification was sufficient to enable a mechanic skilled in mechanical arts to construct and carry into practical use the Cawood machine; or, in other words, whether whatever is essential to the Cawood machine could be read out of the prior specification. We think no such information was given by the English patent.

That the old slide vise contains the principle of the Cawood machine has not been contended with much earnestness, and certainly it cannot be successfully. Nothing, then, is found in the case sufficient to show that the patent is void for want of novelty of the invention, and the court was not in error in holding it valid.

We come next to the question whether machines employed by the defendants in repairing the ends of railroad rails are infringements of the patent. Those which have been used by the several Companies defendants, and which are claimed to have been infringements, were, in addition to the Cawood, seven in number. They were the "Illinois Central," the "Etheridge," the "Whitcomb or Cleaveland block," the "Michigan Southern," the "Bayonet vise," the "Beebe and Smith," and the "Blaine reversible rolls," all of which, except the last, were held by the Circuit Court to be infringements. Of these, the Illinois Central Railroad Company has used only the "Illinois Cen-

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tral," the "Bayonet vise," and the "Beebee and Smith;" the Pittsburg, Fort Wayne and Chicago Railroad Company has used the Whitcomb or Cleaveland block; the Chicago and Alton Railroad Company has used only the Whitcomb; the Chicago, Burlington and Quincy Railroad Company has used only the Cawood and the Etheridge; and the Michigan Southern and Northern Indiana has used only the Beebee and Smith, the Bayonet vise, and the Whitcomb. We have had before us models and drawings of them all, and we have considered the testimony respecting them which is found in the records. It is but faintly contended, if at all, that the Illinois Central, the Etheridge and the Whitcomb machines are not infringements of the Cawood. The principle of each of them, the object sought for, the combination and arrangement of the parts, and the mode of operation for the purpose of effecting the described result, are so manifestly the same as that described in the complainant's patent that a detailed examination of them is unnecessary. But it is earnestly insisted that neither the use of the Bayonet vise, nor that of the Michigan Southern machine, nor that of the Beebee and Smith, used by some of the defendants, can rightfully be held to infringe the patent; and such is our opinion. We have already called attention to the fact that a very limited construction must be given to the claim of the Cawood patent, in view of the state of the art when the patent was granted, and of the explanations contained in the specification. It was said in *Turrill v. R. R. Co. (supra)*, "Special devices are described as combined and arranged in a particular manner, and operating only in a special and peculiar way, for a special purpose, and to effect a special result." To repeat the definition of the invention given in that case, it is "of such a movable press-block as is described, having its edge formed to the side of the rail, in combination with such other blocks as is described, with its edge of similar but reversed form, arranged as described, and combined

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and operating in the particular way described, for the special purpose of effecting the desired result."

If the claim be thus limited, if such was the invention Cawood made, the use of the Bayonet vise and of the Michigan Southern, cannot, we think, be regarded as an infringement. Both the machines were manifestly copied from the Springfield machine, which we have endeavored to show did not anticipate or contain the principle of Cawood's invention. Each is substantially a vise, and not an anvil. The combination of the blocks is unlike that of the Cawood improved anvil. It is not through the anvil, and the rail when in place for welding and shaping does not rest on the anvil. The iron to be hammered rests upon the jaws and, consequently, it is much more liable to displacement than it would be if arranged as described by Cawood. In each, only a part of the force of the blows reaches the anvil; for the movable block is supported by an arm, attached by a hinge or by journals to the base of the block. It is true that by the change in the shape of the jaws one of the functions of the Cawood machine is secured—that of preserving the shape of the rail during the process of hammering; but that is only one of the elements of the Cawood. Neither of these two machines can be said to be an improved anvil or swage-block. In neither, are the two blocks combined by means of an anvil. In neither, is a raised block cast as a part of the anvil. In neither, is there any such movable press-block attached to the anvil as is described in the Cawood patent, combined and operating with the other parts of the machine in the manner described. And in neither of them is there any part of an anvil immediately below and fitted to support the rail when in place for being repaired. Each of them has, however, all the parts and substantially the arrangement and combinations of the Springfield machine, and in principle they are identical with it, the only appreciable difference being in the shape of the jaws. If, therefore, they are infringements of the Cawood patent, that

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patent is void for want of novelty, for it was anticipated by the Springfield. If, on the other hand, the Cawood machine was novel, as we think it was, if it was not anticipated by the Springfield, the conclusion is inevitable, that neither the Michigan Southern nor the Bayonet vise is an infringement.

Much of what we have said is applicable to the Beebee and Smith machine, the use of which the circuit court also held to be an infringement of the Cawood patent. To the inquiry : what constitutes an infringement of that patent it is indispensable to keep in mind what the invention patented is. It is not, we repeat, any mode by which the result sought and obtained is secured, but a machine that attains the desired end by means of described agencies, combined in a described manner and operating in a described way. Thus the patent was considered in 1 Wallace. Now, we think the Beebee and Smith machine, though arriving at the same result, does not profess to attain it by means of the agencies described in the Cawood patent, or any agencies that can be regarded as equivalents combined in the manner described by Cawood, and operating in the same or an equivalent way. True, it is a machine for holding a rail while the exfoliated or crushed end thereof is undergoing reparation, but it performs its functions in a manner peculiar to itself, unlike the mode in which the Cawood operates. The construction of the two machines is very dissimilar. In the Beebee and Smith there is no fixed block or jaw a part of the anvil. Neither is there any movable block or jaw attached in any manner to the anvil, or connected in any manner with a fixed block or with the anvil. There are two jaws sliding up and down in a V-shaped notch in an anvil entirely unconnected with each other, and kept in place only by their own weight and that of the superincumbent rail. They are not advanced towards each other, or retired by cams or any equivalent mechanism. When by force of gravity they descend into the V-shaped cavity, and thus ap-

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proach each other, the rail rests upon them and not on the anvil; and when grasped by them, all the force of the blows necessary in welding is expended upon them through the rail, and only remotely upon the anvil. Bringing the jaws together by their gravity cannot be said to be an equivalent for cams or levers, or any other mechanical device. The Beebee and Smith machine, then, has neither such a fixed block nor such a movable press-block as is described in the Cawood machine, nor are the two blocks combined in substantially the same way, and the mode of operation is substantially unlike that described by Cawood. It is impossible, therefore, to hold that its use is an infringement of the complainant's patent.

We do not care to expend much time in refuting the argument of the appellee that a bottom support for the rail in the use of the Cawood invention is injurious, and that it is, therefore, no essential part of the device patented to him. Considerable evidence has been given, tending to show that the face of the anvil under the jaws has been chipped off or cut out, and that thus altered the thing invented works as well, if not better, than it would if the alteration had not been made. In the nature of things, this is impossible, and no amount of testimony can convince us that such is the fact. Manifestly, the chipping off was made to evade the patent. The best mode of using the device would, doubtless, be to construct the blocks so as to fit exactly the sides of the rail. Thus, its shape and its height would be maintained during the process of hammering and shaping the crown. But this exact fit may not always occur, and whenever it does not, the bottom support on the anvil is of importance. This is made evident by the fact that when experiments have been made by chipping off the anvil at the bottom of the blocks or jaws, if more than about three-eighths of an inch was removed, it has been found advisable to support the rail by a roller, as in a Cleaveland vise, or by introducing a key. It proves nothing to show that rails may be repaired

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without any support at their base. Because the invention has been used in an imperfect condition, or altered slightly in one particular without serious loss, is no proof that it was no invention, or that the use of it in its altered condition was no infringement.

It follows, from what we have said, that the decrees must be reversed and set aside, so far as the defendants have been held accountable for the use of the Beebee and Smith machine, or the Bayonet vise, or the Michigan Southern. But so far as the Whitcomb, the Etheridge, the Cawood or the Illinois Central have been used, the defendants are answerable to the complainant.

We come, then, to the inquiry whether there was error in the ascertainment of the profits made by the use of those devices. This inquiry is exceedingly embarrassed by the very unusual manner of proceeding in the court below. After having determined that the Cawood patent was valid, the court, instead of deciding whether there had been any infringement, by a decretal order, referred to a master to find what machines used by the defendants were infringements, and to state an account between the parties. In obedience to this order, the master reported that seven machines used by the defendants infringed the patent, and on that assumption he returned stated accounts. This report the court corrected, holding that one of the seven machines was not an infringement; and sent the case back to the master to report the damages sustained by the plaintiff from the use by the defendants of the other machines, giving him liberty to reconsider his findings as to the cost of fuel and labor in repairing rails on the common anvil and the plaintiff's machine, with liberty also to hear additional evidence, and report such conclusions as might be warranted by the whole testimony. Under this second reference, the master submitted another report, to almost the whole of which exceptions were taken. The court sustained those which related to the ascertainment of profits made by the

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defendants, and the measure thereof; and also sustained those which related to the allowance of profits for the use of the complainant's machine by the defendants before he had title to the patent, or any part or interest therein. The effect of this was to set aside the entire report of the master, so far as it stated an account between the parties. That subject was then all at large; and without further reference the court proceeded, itself, to find the amount of profits the defendants had respectively made by the use of the invention owned by the plaintiff, and found the same to be that for which the final decrees were subsequently entered. The decree in each of the cases was for much less than the master had reported. But how it was made up we are not informed. No account was stated accompanying the decrees. Though the bill prayed for an account, and though an account was decreed, the record shows no account. Nothing in the decree shows us how many rails had been repaired, or what portion of the rails. Nothing in the decree exhibits what was the comparative cost of repairing with the patented machine and with the common anvil. The cases have come to us, therefore, in such a condition that we are called upon to perform the duties of a master. This ought not so to be; and probably we would be justified in reversing all the decrees, and sending the cases back for a statement of accounts. But the litigation has been long protracted, at great expense to the parties; and this consideration has induced us to examine the evidence submitted to the master and reported by him, in order to discover whether there has been an overestimate of profits in those cases where the defendants used only the machines the use of which was a plain infringement on the Cawood patent.

Without entering into details, we are constrained to say that, in our opinion, there has been no such overestimate. We think the weight of the evidence leads to the conclusion that the number of feet mended on the infringing machines, the gain in mending, compared with the cost of mending on

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the common anvil (which the court must have determined was about thirty-six cents per foot), considering the saving of labor and fuel, were such as justified the decrees that were made. There are, undoubtedly, great differences in the statements of the witnesses, but we think it is not difficult to see where is the preponderance of the evidence. The master's estimate was manifestly too high. We cannot say that of the court was. And, after the action of the court upon the master's first report, it must be presumed that no profits were allowed for any use of the Cawood patent before the plaintiff became its owner.

There is nothing more in these cases, that we feel called upon to notice, except the suggestion that repairing railroad rails was unprofitable, compared with what might have been done. It has been argued that it would have been better for these defendants if, instead of repairing the crushed and exfoliated ends of the rails, they had cut off the ends and relaid the sound parts, or had caused the rails to be re-rolled. Experience, it is said, has proved that repairing worn out ends of rails is not true economy, and hence it is inferred that defendants have derived no profits from the use of the plaintiff's invention. The argument is plausible, but it is unsound. Assuming that experience has demonstrated what is claimed, the defendants undertook to repair their injured rails. They had the choice of repairing them on the common anvil or on the complainant's machine. By selecting the latter, they saved a large part of what they must have expended in the use of the former. To that extent they had a positive advantage, growing out of their invasion of the complainant's patent. If their general business was unprofitable, it was the less so in consequence of the use of the plaintiff's property. They gained, therefore, to the extent that they saved themselves from loss. In settling an account between a patentee and an infringer of the patent, the question is: not what profits the latter has made in his business, or from his manner of con-

Notes and Citations.

ducting it, but what advantage has he derived from his use of the patented invention?

We will pursue the subject no further. It follows from what we have said that in those cases in which the defendants have been charged with the profits made from the use of the ' Bayonet vise,' or the "Michigan Southern" machines, or the "Beebee and Smith" machine, the decrees of the Circuit Court are erroneous, while in the other cases, the defendants having used only the Cawood, or the Etheridge, or the Illinois Central, or the Whitcomb (the infringing machine), we discover no error. Our judgments, therefore, are as follows:

The Illinois Central R. R. Co. v. Turrill, No. 140.

The decree of the Circuit Court is reversed and the cause is remanded for further proceedings, in accordance with this opinion.

The Michigan Southern and Northern Indiana R. R. Co. v. Turrill, No. 143.

The decree of the Circuit Court is reversed and the cause is remanded for further proceedings, in accordance with this opinion.

The Chicago and Alton R. R. Co. v. Turrill, No. 141.

The decree is affirmed.

The Chicago, Burlington and Quincy R. R. Co. v. Turrill, No. 142.

The decree is affirmed.

The Pittsburgh, Fort Wayne and Chicago R. R. Co. v. Turrill, No. 144.

The decree is affirmed.

FIELD, J.—Mr. Justice SWAYNE and myself dissent from so much of the opinion and judgment in these cases as approves the estimate of damages made by the court below.

94 U. S. 710-711.

Notes:

3. What constitutes a sufficient description in a prior publication :

Notes and Citations.

Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290.]
Cohn v. Corset Co., 93 U. S. 366 [10 Am. & Eng. 473].
Downton v. Yeager Milling Co., 108 U. S. 466.
Eames v. Andrews, 122 U. S. 40.

5. Rule on an accounting :

Railroad Co. v. Turrill, 110 U. S. 301.

Patent in suit:

No. 15,687. Cawood, J. D. September 9, 1856. Anvil.

OTHER SUITS ON SAME PATENT:

Turrill v. Railroad, 1864. 1 Wall. 491 [7 Am. & Eng. 202].
Turrill v. Illinois Central R. R. Co., 1867. 3 Biss. 66; 3 Fish. 330.
Turrill v. Illinois Central R. R. Co., 1871. 3 Biss. 72.
Turrill v. Illinois Central R. R. Co., 1873. 5 Biss. 344.
Turrill v. Illinois Central R. R. Co., 1880. 20 Fed. Rep. 912.
Illinois Central R. R. Co. v. Turrill, 1884. 26 O. G. 917.

Cited:

IN SUPREME COURT IN:

Elizabeth v. American Nicholson Pavement Co., 1878. 97 U. S.
126; Bk. 24 L. ed. 1000.
Chicago, etc., R. R. Co. v. Turrill, 1880. 101 U. S. 836; Bk. 25
L. ed. 1009.

Notes and Citations.

Barton v. Barbour, 1881. 104 U. S. 126; Bk. 26 L. ed. 672.
Root v. L. S. & M. S. R. Co., 1882. 105 U. S. 189; Bk. 26, L. ed. 975.
Illinois R. R. v. Turrill, 1884. 110 U. S. 302; Bk. 28 L. ed. 154.
Dobson v. Bigelow Carpet Co., 1885. 114 U. S. 439; Bk. 29 L. ed. 177.
Thompson v. Wooster, 1885. 114 U. S. 104; Bk. 29 L. ed. 105.
Tilghman v. Proctor, 1888. 125 U. S. 136; Bk. 31 L. ed. 664.

IN CIRCUIT COURTS IN:

Knox v. Great Western Quicksilver Mining Co., November, 1878. 6 Sawy. 430; 4 Ban. & Ard. 25; 7 Reporter, 325; 14 O. G. 897.
Sargeant v. Yale Lock Mnfg. Co., October, 1879. 17 Blatch. 249; 4 Ban. & Ard. 579; 17 O. G. 106.
Campbell v. James, May, 1880. 18 Blatch. 92; 5 Ban. & Ard. 354; 2 Fed. Rep. 338; 10 Reporter 9; 18 O. G. 1111.
American Saw Co. v. Emerson, December, 1880. 8 Fed. Rep. 806.
Calkins v. Bertrand, July, 1881. 10 Biss. 445; 8 Fed. Rep. 755.
Hood v. Boston Car Spring Co., July, 1884. 21 Fed. Rep. 67.
Reed v. Lawrence, October, 1886. 29 Fed. Rep. 915.
Everest v. Buffalo Lubricating Oil Co., July, 1887. 31 Fed. Rep. 742.
Creamer v. Bowers, May, 1888. 35 Fed. Rep. 207.

IN TEXT-BOOKS :

2 Abb. Pat. Laws, 1886, p. 367.
Merwin on Pat. Invt., 1883, pp. 161, 722.
Walker on Pats., 1883, pp. 39, 247, 439, 496, 509.

[illegible]

Syllabus.

JOHN ROBERTSON ET AL., APPELLANTS v. ELI W. BLAKE. ELI W. BLAKE, APPELLANT v. JOHN ROBERTSON ET AL.*

94 (4 Otto) U. S. 728-734. Oct. Term, 1876.

[Bk 24, L. ed. 245; 11 O. G. 877.]

Argued April 6, 9, 1877. Decided April 23, 1877.

Particular patent construed. Novelty. Infringement. Evidence of utility. Improvement and device improved upon. Nominal damages.

1. Letters patent No. 20,542, granted Eli W. Blake, for a Stone-Breaker, June 15, 1858, reissue No. 2,145, January 9, 1866, and extended June 15, 1872, *held* not anticipated by the earlier patent to Hobbs & Brown, No. 6,690, September 4, 1849, for "Improvements in the application of well known mechanical means for the purpose of crushing ice," and to Hamilton, No. 10,365, January 3, 1854, and additional improvement No. 124, May 22, 1855, for "Crushing and grinding Quartz or other Substances," they not containing any of the essential elements of Blake's invention: *Held* that it was infringed by the substitution for one part of the operating mechanism, of an equivalent for the omitted element. (p. 278.)
2. Where one of the defences to the patent was that the machine described was of no practical utility, *held* that the number sold by complainant, as shown by the record, is conclusive upon the subject. (p. 286.)
3. When an original machine and an improvement upon it are both patented, neither patentee can use what does not belong to him without the requisite authority from the owner. (p. 284.)
4. The complainant was found entitled to nominal damages only, the burden of proof being upon him, and it appearing that the proof was meager and indefinite, but four machines made, no established license fee, the profits made being due in part to inventions covered by other patents, and no distinction made between profits accruing from the use of complainant's inven-

*See Explanation of Notes, page III.

Statement of the case.

tion and that from the other inventions and manufacturer's profits. (p. 284.)

Cross appeals from the Circuit Court of the United States for the Eastern District of New York.

The case is fully stated by the court.

The drawings and specifications of the Blake reissue are as follows :

ELI W. BLAKE, OF NEW HAVEN, CONNECTICUT.

IMPROVEMENT IN STONE-BREAKERS.

Specification forming part of Letters Patent No. 20,542, dated June 15, 1858; Reissue No. 2,145, dated January 9, 1866.

To all whom it may concern :

Be it known that I, Eli W. Blake, of New Haven, in the county of New Haven and State of Connecticut, have invented a new and useful machine for breaking stones for road, metal, and other purposes, which machine I call a "Stone-Breaker;" and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making part of this specification.

My stone-breaker, so far as respects its principle or its essential characteristics, consists of two jaws, between which the stones are to be broken, having their acting faces so nearly in an upright position that stones will descend by their own gravity between them, and convergent downward one toward the other in such manner that while the space between them at the top is such as to receive the stones that are to be broken, that at the bottom is only sufficient to allow the fragments to pass when broken to the required size; and of a revolving shaft, driven by steam or other power, which is made to impart to one of these jaws a continual

Statement of the case.

vibratory movement, causing it to alternately advance toward and recede from the other jaw through a short and definitely limited space. Hence when the shaft is revolved and a stone is dropped into the space between the jaws, it falls down until its further descent is arrested between their convergent faces. The movable jaw, advancing, crushes it; then, receding, liberates the fragments, and they again descend, and if too large are again arrested and crushed, and so on until all the fragments having been sufficiently reduced have passed out through the narrow space at the bottom.

In order that the machine may be adjusted to produce fragments of any desired size, I make provision for varying the distance between the jaws at the bottom at pleasure, and as the resistance to the motion of the jaw and shaft is very great when the jaw is advancing, and little or nothing during its receding movement, I have combined with the movable jaw and shaft a fly-wheel, for the purpose of rendering the strain upon the driving-power more equable.

The details of the structure of the machine—such as the manner of supporting the jaws in their proper relative position, and of imparting the definite motion with the required power to the movable jaw from the revolving shaft—may be varied indefinitely without affecting its principle of operation. I proceed to give a full description of all the parts of the machine as I have constructed it.

The machine may be made of any size, varying according to the size of the stones it is to be capable of receiving and the amount of work it is to accomplish; and its proportions, having reference to strength, may be varied according to the hardness of the material on which it is to operate.

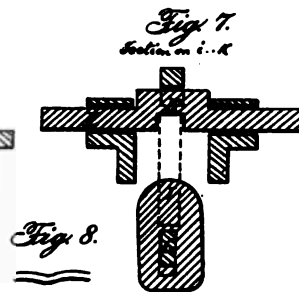
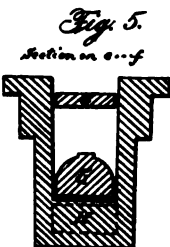
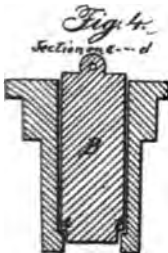
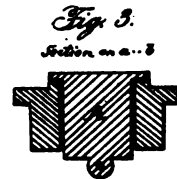
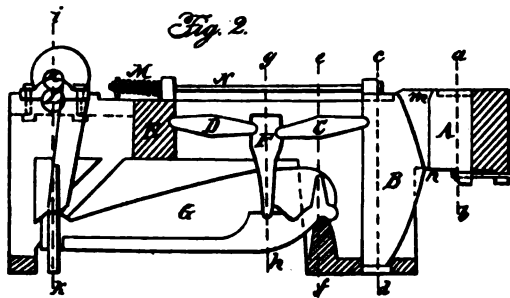
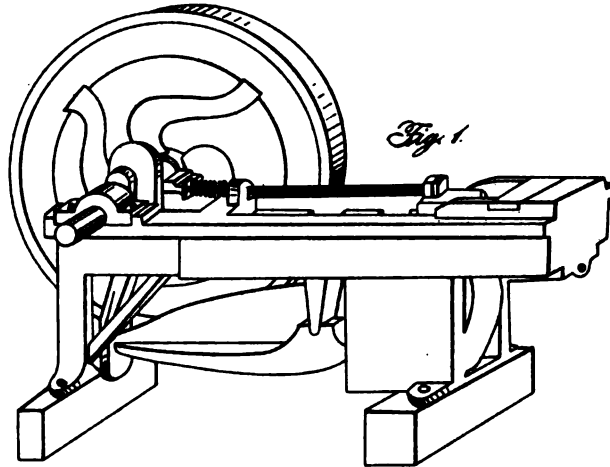
The annexed drawings represent, on a scale of three thirty-seconds of an inch to an inch, a machine which I have constructed that was designed to be capable of breaking blocks of trap-rock not exceeding three and a half inches thick and nine inches square, and which I have found fully competent to perform that work.

Fig. 1 is a perspective view of the machine, shown as rest-

E. W. BLAKE.
Stone-Crushing Machine.

No. 2,145.

Reissued Jan. 9, 1866.



Witnesses:
L. Brown
Geo. D. Brown

Inventor:
E. W. Blake by
A. H. Kelly
his atty.

Statement of the case.

ing on two timbers, to which it is secured by bolts. In this figure most of the parts of the machine are partially concealed from view by the main frame or casting, which supports all the other parts. Fig. 2 is an orthographic view of all the parts in place, as they would appear upon removing one side of the main frame. Figs. 3, 4, 5, 6, 7 are transverse sections of the machine at the several points indicated on Fig. 2.

In Fig. 2 the parts of the drawings which are shaded by diagonal lines are sections of those parts of the main frame or casting which run transversely from one side to the other, connecting the two sides together, and which are supposed to be cut asunder in order to remove one side.

A is the stationary jaw. This is placed against one end of the frame, to which it is secured at the bottom by a bolt and at the top by lateral projections, which fit into corresponding recesses or notches in the top of the frame, as shown in Fig. 1, and in section, Fig. 3. By such a construction, making this jaw separate from the frame it can be removed when worn, and a new one readily substituted in its place.

B is the movable jaw. This piece extends downward to and enters a mortise in the lower transverse part of the main casting, by which means its lower end is prevented from moving in either direction horizontally. To give it a vertical support it is provided with shoulders, (seen in section at *l l*, Fig. 4), which rest upon the main casting at the ends of the mortise. These shoulders, and also the part which enters the mortise, are slightly rounded, as shown in Fig. 2, so as to allow the upper end to vibrate.

m n is the space between the acting faces of the jaws, into which the stones are introduced. This space is sufficiently wide at *m* to receive the largest pieces of stone which the machine is designed to break, and thence converges downward to a width at *n* which is only sufficient to allow the fragments to pass when broken to the required size.

The acting-faces of the jaws are not plane surfaces, but are

Statement of the case.

corrugated, the corrugations running vertically, so that a section of the opening n by a horizontal plane would present the outlines shown in Fig. 8. These corrugations serve to diminish the strain to which large pieces of stone would otherwise subject the machine, and also to prevent their fragments of large breadth from passing through the opening n .

The two pieces C and D, with the intervention of the piece F, constitute an elbow-joint, C and D articulating on F at their adjacent ends and at their outer ends, one of them on the cross-bar E of the main frame, and the other on the back of the movable jaw.

The piece F at its lower end articulates on the lever G. This lever rests at one end on the fulcrum H, which forms a part of the main casting, and the other end is connected by the connecting rod or piece I with the crank K of the shaft L. On one end of the shaft L is placed a fly-wheel, P, four feet in diameter, weighing seven hundred and fifty pounds, and on the other end a pulley (not shown in the drawings) to receive the belt which drives the machine. The spiral spring M, through the medium of the rod N, tends to hold the movable jaw back, thus keeping the pieces C and D in contact with their bearings and securing the return motion of the jaw.

It is obvious that the revolution of the crank will vibrate the lever, and that this, through the medium of the pieces F, C, and D, will give a short and definitely-limited vibration to the movable jaw B. The entire operation of the machine will be understood without further explanation.

In order that the pieces C and D, when raised to their highest elevation, may not be retained there by the friction of their bearings, they should, when thus elevated, deviate from a line with each other by an angle of not less than five degrees; and in order that stones may not be ejected from the jaws without being crushed, the angle of convergence of their acting-faces should not exceed eighteen degrees.

In order that I may vary the size of the opening n , so as

Statement of the case.

to adjust the machine to produce fragments of any desired size, I provide several pieces C, differing slightly in length. Then by substituting a longer or shorter one the size of the opening may be diminished or increased at pleasure. By the same means the opening may be restored to the proper size when enlarged by wear.

To prevent the rapid wearing of the jaws, they should be made of hard iron and be well chilled, and to prevent the wearing away of the inside of the frame adjacent to the space where the stones are crushed, I contemplate casting the frame in such form as to receive these chilled pieces, which may be replaced when worn. I also contemplate making the movable jaw-piece in such form as to receive a separate piece of chilled iron for its acting face.

I also contemplate combining with the machine a revolving screen to remove the fragments as they fall from it and separate them into two or more sizes.

What I claim as my invention in the herein-described machine, and desire to secure by Letters Patent, is—

1. The combination, in a stone-breaking machine, of the upright convergent jaws with a revolving shaft and mechanism for imparting a definite reciprocating movement to one of the jaws from the revolving shaft, the whole being and operating substantially as set forth.

2. The combination, in a stone-breaking machine, of the upright movable jaw with the revolving shaft and fly-wheel, the whole being and operating substantially as set forth.

3. In combination with the upright converging jaws and the revolving shaft imparting a definitely limited vibration to the movable jaw, so arranging the jaws that they can be set at different distances from each other at the bottom, so as to produce fragments of any desired size.

ELI W. BLAKE.

Witnesses :

W. R. RONALDS,

M. N. HUTCHINSON.

Argument of counsel.

Mr. B. E. Valentine, for Robertson et al. :

The invention is invalid because the device described is not practical. A patent law is not a law which grants to a patentee a monopoly without any return from him ; on the contrary, the Government confers the valuable privilege on an inventor, only when he has performed certain requisites on his part. And foremost among them all—that he must have his alleged invention embodied, at the time of patenting it, in a *practical* and *useful* form. A patentee cannot deprive the public or other inventors of the benefit of valuable inventions, by holding a patent of *theoretical machinery* which cannot be of practical use.

The complainant, upon his own showing, attained no practically useful results until he had invented what he calls in his 1860 patent an “improved machine.” The law, in such a case as this, is not in doubt.

The Supreme Court of the United States in *Mitchell v. Tilghman*, 19 Wall. 287 [9 Am. and Eng. 174], says “taken as a whole, the evidence convinces the Court that the patentee never did succeed in introducing his invention into practical use by the means and in the *mode of operation* described in the specification to such an extent as would warrant the Court in finding that issue in his favor.”

We say, therefore, that Blake’s patent, which disclaims any of the details of construction, and claims a new principle of operation for a crushing machine is fully anticipated by the device shown in the Hamilton patent, even if we had not the testimony of the witness Serrill. To any suggestion of the complainant that the Hamilton machine was *abandoned* by its inventor, we answer, it is not necessary that a machine should even have been actually *made* by Hamilton. It is sufficient to defeat the Blake patent to show that the same combination had been *described* in a prior patent or a printed publication.

If Hamilton abandoned his invention he abandoned it to the public and not to Blake.

Evans v. Eaton, 1 Pet. C. C. 323; *Colt v. Massachusetts*

Argument of counsel.

Arms Co., 1 Fish. 108. Blake, therefore, not having limited himself to a claim for the *peculiar jaws* described in his patent, but, having made his claims for all mechanism embraces the features of a general combination, which would cover even the machine shown opposite folio 39 of the record, must be held strictly to an accountability of his claims, and his patent declared invalid, because all the features thereof are shown in Hamilton's patent.

The present patent is a reissue of the original, *the specification being precisely the same* as the specification in the original patent, the claims only being amended as they were found to be too broad in the original patent.

The invention of Hobbs and Brown anticipates in every point the claim of Blake as made in his original patent. The plaintiff, finding that his patent was anticipated got a reissue of it, inserting as part of his claim a combination of a *revolving shaft* to work the jaw.

In view of the state of the art as shown by the Hobbs and Brown machine, no invention was required to construct a crushing machine actuated by a revolving shaft. The mere substitution of other power than hand power to a machine involves no invention.

Crehore v. Norton, Law's Dig. 276.

If the complainant's patent shall be held to be a valid patent, its claims are only for the specified combination, new so far as they produce *some new result* which is not found in the elements of the combination, either singly or aggregated.

Hailes v. Van Wormer, 20 Wall. 354 [9 Am. & Eng. 340].

The law is, that a patentee can only recover the damages which he *actually proves*.

City of New York v. Ransom, 23 How. 287 [7 Am. & Eng. 188].

The plaintiff assumes that he would have sold a machine in the place of every one of the machines sold by the defendants; but there is no such presumption afforded by the law.

Argument of counsel.

On the contrary this court expressly repudiates any such measure of damages.

Seymour v. McCormick, 16 How. 480 [6 Am. & Eng. 200]; Curtis on Pats. 4th ed. 458.

The damages were, therefore, correctly assessed at the nominal sum of \$1.00. Jones v. Morehead, 1 Wall. 155 [7 Am. & Eng. 165].

Messrs. H. T. Blake and J. S. Beach, for Blake:

In this invention the patentee supposed that he had made not a mere improvement on some previous machinery, but as he says "*a new and improved machine*," which I call a stone breaker," operating on a principle never before adopted. This claim on his part had been judicially sustained before this suit was brought by several courts in this country and in England in which this patent has been severely litigated, and some of these decisions will be cited in this brief. From these decisions and from the evidence in this record, it appears that whereas before 1858 no successful machine was ever made for breaking stone into lumps or fragments, since that date this invention of the plaintiff has come largely into practical use, not only in this country but in other parts of the world.

It is evident that the ice breaker of Hobbs and Brown contains no such combination as is described in the first and second claims of the Blake patent and thus shows a structural difference decisive in itself of the question of substantial identity between them. This difference is not a formal one merely, but arises from a difference of principles. Neither machine could do the work of the other. Judge Shipman says in the case of Blake v. Stafford, 3 Fish. 294: "its arrangement and organization differ widely from the plaintiff's and could not perform the work of breaking stones, as does the latter."

An inspection of the model and drawing of the Hamilton machine shows the entire absence of the leading features and essential characteristics of the Blake stone breaker, and

Argument of counsel.

of course a complete difference between the two and the principles and modes of operation.

The respondents' machine is, like the plaintiff's, a machine for breaking stone. It is not denied that it consists of two upright convergent jaws wide enough apart at the top to receive the stone to be broken, and open at the bottom sufficiently to permit the fragments to pass when broken to the required size; one of the said jaws having imparted to it a short and powerful vibratory movement from a revolving shaft on which is a fly-wheel, neither is it disputed that the language of the Blake patent precisely describes its operation to breaking stone. Nevertheless respondents deny that their machine and its operation are substantially like plaintiff's, because they say that the jaw in plaintiff's machine has a *definite* vibratory movement, while theirs has not.

In plaintiff's machine the movable jaw receives its vibratory movement from the revolving shaft through iron rods and rollers. In respondent's machine it receives its vibratory movement from the revolving shaft through a confined column of water. If there is no resistance to the action of the jaw its motion is not denied to be "definite." The well known fact in physics that "for all practical purposes water and cast iron alike are substantially incompressible," is also admitted. Hence we have in the one machine a vibratory movement imparted to the jaw from a revolving shaft through the medium of one incompressible agent, iron. In the other we have a vibratory movement imparted to the jaw from a revolving shaft through the medium of another incompressible agent, water. How the vibratory movement thus imparted by similar agencies in the two machines becomes "definite" in the one case and "indefinite" in the other is not explained.

As no question is made that respondents' machine contains a device for setting the jaws at different distances from each other so as to produce fragments of any desired size, it follows that it infringes each and every claim of plaintiff's patent.

Opinion of the court.

“When an inventor finds it profitable to exercise his monopoly by selling licenses to make or use his improvement, he has himself fixed the average of his actual damage, when his invention has been used without his license.” *Seymour v. McCormick*, 16 How. 490 [6 Am. & Eng. 200].

“The established rate of license is the measure of plaintiff’s damages.” *Emerson v. Simm*, 2 Fish. 281; *Hogg v. Emerson*, 11 How. 607 [5 Am. & Eng. 279]; *Pitts v. Hall*, 2 Blatch. 238; *Sanders v. Logan*, 2 Fish. 167; *Livingston v. Jones*, 3 Wall. Jr. 330.

It is obvious that unless the patentee’s profits on sales of machines are the rule of damages, when he retains the monopoly of sales in his own hands like the plaintiff in this case, he is entirely remediless against infringers. The complainant has not left the Court “to guess at his damages,” but has furnished all the facts and data in his power for their estimation. He could do no better on another trial, and if upon the testimony before the Court, his damages cannot be ascertained, the fault must be with the law and not with himself.

Mr. Justice SWAYNE delivered the opinion of the court:

These are cross-appeals in the same cause. Both involve questions in mechanics. These being determined, the legal propositions which apply are so well settled as to admit of no controversy.

A patent was granted to Blake on the 15th of June, 1858, by the United States, for a stone-breaker. On the 9th of January, 1866, the same authority reissued the patent to him, with amended specifications. It was extended on the 15th of June, 1872. The bill in this case is founded upon the latter patent. It charges infringement.

The answer avers that the machine described is of no practical utility, denies the novelty of the invention, and also the alleged infringement.

Opinion of the court.

The description in the specification sets forth three things as the essential characteristics of the machine :

(1) Two jaws, within which the stones are to be broken. Their faces are to be so nearly in an upright position that the stones will descend between them automatically. The jaws are to be so far convergent that the interspace at the top will be sufficient to receive the stones, and that at the bottom only such as will allow the fragments to escape when broken, of the required size.

(2) A revolving shaft, driven by steam or other motive power, imparting to one of the jaws a continual vibratory movement, causing it alternately to approach toward and recede from the other jaw, through a short and definitely limited space, so that, when a stone is put in, the movable jaw will advance and crush it, then, receding, liberate the fragments, which again descend, and, if too large, are re-arrested and crushed again ; and so on, until the fragments have passed out through the open space at the bottom. The distance between the jaws is to be adjustable at pleasure, so that the stone can be broken of any desired size.

(3) A fly-wheel is combined with the revolving shaft and movable jaw, for the purpose of rendering the strain upon the power more equal.

The claim is for:—

A combination of a stone-breaking machine of upright converging jaws with a revolving shaft and mechanism imparting a definite reciprocating movement to one of the jaws from the revolving shaft, the whole being and operating as set forth.

The combination in a stone-breaking machine of the upright movable jaw with the revolving shaft and fly-wheel, the whole being and operating as set forth.

In combination with the upright converging jaws and revolving shaft imparting a definitely limited vibration to the movable jaw, so arranging the jaws that they can be set

Opinion of the court.

at different distances from each other at the bottom, thus producing fragments of every desired size.

A moment's glance at the model furnishes a sufficient answer to the objection of the want of practical value. It would be passing strange if a machine of that character could have gone through the severe conflicts of litigation which this patent has encountered, and have come forth victorious from every contest. It has proved equal to every ordeal to which it has been subjected. The number sold by the complainant, as shown by the record, is conclusive upon the subject.

The patent to Hobbs & Brown of the 4th September, 1849, and the patents to Hamilton of the 30th of January, 1854, and the 5th of January, 1855, antedate the patent to Blake. It is insisted that each of them is for a machine substantially the same with the one described in Blake's patent, and that they are fatal to his claim of the requisite novelty of his alleged invention.

The machine of Hobbs & Brown is for "improvements in the application of well known mechanical means for the purpose of crushing ice." * * * The "improvements consist in applying a hopper with one diagonal fixed side and two parallel sides, to contain the ice, and compressing the ice by a movable fourth side, the fixed diagonal side and moving side having within them dental projections cut or cast on, to operate downward and prevent the ice from rising in the hopper when compressed, and also to enter and split the ice."

The machine is operated "by the combination with these parts, of a lever fitted with an eccentric or cam-formed point."

There is in this description neither of the ingredients nor the compound of the Blake machine. Every element and the combination are wanting. There is no mention of the converging adjustable jaws of the revolving shaft, nor of the fly-wheel. The differences are as marked in the mode of operation as in the structural elements of the machine.

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The Hobbs & Brown machine does its work by the downward and sweeping movement of the jaw, and the grasping and splitting by the teeth. The motive power is supplied and applied by a hand lever, which gives a motion irregular, and varying with the varying exigencies of the ice during the process to which it is subjected.

The Blake machine performs its functions by the short, regular and unvarying vibrations of the smooth-faced adjustable jaw, driven without intermission by the revolving shaft.

It is obvious that the Hobbs & Brown machine could not be applied with effect to the purpose of breaking stones, without essential changes of principle and details.

Hamilton's machine was "for crushing and grinding quartz or other substances."

In the specification annexed to his original patent, he says:

"My invention consists in the use of a cylindrical nut or pestle in a similarly formed basin, the pestle having a partial rotary and crushing motion communicated to it by means of a lever attached thereto.

'A' is a basin, the lower part of which is made circular, and the sides parallel to each other. 'b b' are flat ends or heads secured to the basin by bolts.

'C' is the shaft carrying the cylindrical pestle, 'd.'

'E' is a lever attached to or formed with the pestle 'd,' the upper end being connected by a joint '2' to a pitman, passing to a crank, eccentric, or other suitable mechanical contrivance, to give the arm 'E' an oscillating movement, and the pestle a partial rotary motion on its shaft 'C.' "

The claim of this patent is for "the means herein described and shown for crushing and grinding metallic ores, consisting of the cylindrical pestle 'd,' provided with grooves in its upper part to crack the lumps of ore, and set on a shaft, 'C,' on which it has a partial rotary motion, and operating in connection with the basin, 'A,' in which said pestle moves to grind the ore into powder by the gradual approach of the

Opinion of the court.

sides of said basin to the cylindrical pestle, said pestle being also provided with a scraper or agitator, '5,' in its lower surface, to operate as specified."

The second patent is declared to "consist in providing means for keeping the pestle down with sufficient force to pulverize the material operated on, and also to prevent the pestle from grinding too finely; *i. e.*, to furnish material for simply cracking the ore or other material into small lumps of any desired size, instead of grinding the same to a powder, thereby adapting the machine to different characters of metallic ores or other substances."

We have here no reflex or embodiment of either of the ideas that found expression in the Blake machine. The converging jaws, the revolving shaft, and the fly-wheel, are all wanting, as in the Hobbs & Brown machine. Instead, there is a cylindrical nut or pestle, having a partial rotary and crushing motion communicated to it by means of a lever attached thereto. The pestle rotates on a central axis within an eccentric concave. The work is done by this pestle. There is nothing of the vibratory motion of a movable jaw, alternately advancing and receding, as in the Blake invention.

The difference is not that of mere mechanical equivalents. It is radical, and goes to the essence of the organisms. These considerations are so obvious, that further remarks upon the subject are unnecessary.

The proofs show that but two of the Hamilton machines were ever made. Practically, the invention was abandoned.

This brings us to the question of infringement.

There are numerous points of similarity and, indeed, of identity, in the respondent's machine, which are not controverted. It is for breaking stone. It has two upright jaws for this purpose, one fixed and the other movable. The jaws converge. The breaking is effected by the convergence. The movable jaw alternately approaches towards and recedes from the fixed one. This movement is pro-

Opinion of the court.

duced by a short and powerful vibratory motion communicated by a revolving shaft, with a fly-wheel upon it. There is an opening at the upper end of the jaws, where the stones are received, and one below, where they are discharged.

The only point of diversity insisted upon by the respondents, is that the vibratory movement in the Blake machine is limited and unvarying, while in the machine of the appellants it is not of this invariable character.

In the Blake machine, the movable jaw receives its movement from the revolving shaft, through iron rods and levers. In the respondent's machine, it is communicated from the revolving shaft, through a confined column of water.

In the appellants' model the revolving shaft is not shown. In their machine, it works the plunger of the pump, from which the water is conveyed to a cylinder behind the movable jaw, whence it is applied to that jaw by means of a ram, the ram taking the place of the piston in an ordinary engine. Thus the vibrating arm, the toggle, the toggle-joint, and the pintals in the Blake machine are dispensed with, and their place supplied by the hydraulic arrangements we have described.

What is so employed in the appellant's machine is the obvious and exact equivalent of what is so dispensed with in the Blake machine. The liability of the packed joints to leakage is a serious objection to such use of water. Any considerable leakage would stop the machine. It could not be used while that condition existed. Constant care and vigilance are necessary in such cases to prevent the frequent occurrence of this evil. Water does not escape from a safety-valve with the same celerity or effect as steam.

The Blake machine has a decided advantage, in the greater simplicity and cheapness of its equivalents.

It is difficult to resist the conclusion that the change had no motive or purpose but evasion.

If there be no extraneous obstruction, the vibratory mo-

Opinion of the court.

tion will be exactly the same in both cases. If there be such obstruction, the safety-valve in the appellant's machine might possibly be brought into use with good effect. But if this were so, the valve would be only an addition and an improvement of the machine. The valve, therefore, is, in any view, quite immaterial to the inquiry we are pursuing.

Where an original machine and an improvement upon it are both patented, neither patentee can use what does not belong to him, without the requisite authority from the owner. The appellants having embodied all the ideas of Blake's invention in their machine, the valve which supplemented it, whether good or bad, is outside of the case, and cannot affect the result.

We think the infringement is clearly made out.

It remains to consider the question of damages. A few remarks upon that subject will be sufficient.

The proof is meager and indefinite.

The infringers made but four machines.

No license fee charged by the complainant is shown. The burden of proof rests upon him. Damages must be proved; they are not to be presumed. The complainant made a profit of \$40 an inch on the width of the jaws of the numerous machines he had sold.

But inventions covered by other patents were embraced in those machines. It was not shown how much of the profit was due to those other patents, nor how much of it was manufacturer's profit. The complainant was, therefore, entitled only to nominal damages. This the court gave him. It was all the state of the evidence warranted. It would have been error to give more.

The decree of the Circuit Court is affirmed. The costs of each appeal are adjudged against the party taking such appeal.

Notes and Citations.

Notes :

1. Infringement of a combination by the substitution of a known equivalent:

Seymour *v.* Osborne, 11 Wall. 516 [8 Am. & Eng. 290].

Gould *v.* Rees, 15 Wall. 187 [9 Am. & Eng. 39].

Fuller *v.* Yentzer, 94 U. S. 288 [p. 138 *ante*].

Cochrane *v.* Deener, 94 U. S. 780 [p. 288 *post*].

Burke *v.* Imhaeuser, 101 U. S. 647.

3. Patented device improved on cannot be used without permission:

Cochrane *v.* Deener, 94 U. S. 780 [p. 288 *post*].

Tilghman *v.* Proctor, 102 U. S. 707. 19 O. G. 859

4. Nominal damages:

City of New York *v.* Ransom, 23 How. 487 [7 Am. & Eng. 88.]

Black *v.* Thorne, 111 U. S. 122.

Patent in suit :

No. 20,542. Blake, E. W. June 15, 1858. Reissue No.

2,145. January 9, 1866. Stone Crusher.

OTHER SUITS ON SAME PATENT :

Blake *v.* Stafford, 1867. 6 Blatch. 195; 3 Fish. 294.

Blake *v.* Eagle Works Mfg. Co., 1871. 3 Biss. 77; 5 Fish. 591.

Blake *v.* Rawson, 1872. 1 Holmes, 200; 6 Fish. 74; 3 O. G. 122.

Blake *v.* Robertson, 1873. 6 Fish. 509; 6 O. G. 297.

Notes and Citations.

Blake v. Robertson, 1873. 11 Blatch. 237.

Blake v. Greenwood Cemetery, 1877. 14 Blatch. 342; 13 O. G. 1046; 3 Ban. & Ard. 112.

Blake v. Boisselier, 1880. 5 Ban. & Ard. 352; 16 O. G. 854.

Blake v. Greenwood Cemetery, 1883. 16 Fed. Rep. 676; 21 Blatch. 222; 25 O. G. 89; 15 Reporter, 741.

Cited:**IN SUPREME COURT IN:**

Dobson v. Bigelow Carpet Co., 1885. 114 U. S. 439; Bk. 29 L. ed. 117.

Tilghman v. Proctor, 1888. 125 U. S. 136; Bk. 31 L. ed. 664.

IN CIRCUIT COURTS IN:

Blake v. Greenwood Cemetery, October, 1877. 14 Blatch. 342; 3 Ban. & Ard. 112; 13 O. G. 1046.

Schillinger v. Gunther, October, 1878. 15 Blatch. 303; 3 Ban. & Ard. 491; 14 O. G. 713.

Star Salt Caster Co. v. Crossman, October, 1879. 4 Cliff. 568; 4 Ban. & Ard. 566.

Kirby v. Armstrong, February, 1881. 10 Biss. 135; 5 Fed. Rep. 801; 11 Reporter, 451; 19 O. G. 661.

Calkins v. Bertrand, July, 1881. 10 Biss. 445; 8 Fed. Rep. 755.

Maier v. Brown, September, 1883. 17 Fed. Rep. 736; 16 Rep. 585.

Reed v. Lawrence, October, 1886. 29 Fed. Rep. 915.

Filley v. Littlefield Stove Co., April, 1887; 30 Fed. Rep. 434.

Bell v. United States Stamping Co., September, 1887; 32 Fed. Rep. 549.

Creamer v. Bowers, May, 1888. 35 Fed. Rep. 207.

Notes and Citations.

IN TEXT-BOOKS :

2 Abb. Pat. Law, 1886. p. 353.

Merwin on Pat. Invt. 1883. pp. 232, 446, 447.

Walker on Pats. 1883. pp. 255, 491.

Syllabus.

WILLIAM F. COCHRANE ET AL. APPELLANTS, v.
JOSIAH W. DEENER ET AL.*

94 (4 Otto) U. S. 780-792. Oct. Term, 1876.

[Bk. 24, L. ed. 139; 11 O. G. 687.]

Submitted November 6, 1876. Decided March 19, 1877.

Powers of Supreme Court of District of Columbia. Discretion of equity court as to trial at law. Jurisdiction. Particular patent construed. Infringement. Formal change. Process—patentability. Process defined. Art. Equivalents. Prior foreign patent.

1. The powers of the Supreme Court of the District of Columbia, in patent cases, are the same as those of the circuit courts of the United States. (R. S. secs. 760, 764). (p. 331.)
2. Upon a bill in equity for the infringement of a patent it is a matter of discretion, and not of jurisdiction, whether a case shall be first tried at law; and in this matter, the courts of the United States, sitting as courts of equity in patent cases, are much less disposed than the English courts are to send parties to a jury before assuming to decide upon the merits. (p. 332.)
3. The jurisdiction of the circuit courts in cases arising under the patent and copyright laws is not changed by the Revised Statutes, and consequently the original cognizance of the circuit courts sitting as courts of equity in patent cases is retained. (p. 332.)
4. Where it is discretionary with a court of equity whether it will first send a case to be tried at law, and it exercises its discretion to decide the case upon its merits without the aid of a jury of any sort, such action is not a ground of appeal. (p. 333.)
5. But if the appellate court were convinced that the case was not properly decided, and could not be properly decided without such a reference, it might, in the exercise of its own discretion, remand it to the court below for that purpose. (p. 333.)
6. Reissued letters patent No. 5,841, W. F. Cochrane, April 21, 1874, (original patent No. 37,317, January 6, 1863,) Bolt-

* See Explanation of Notes, page III.

Syllabus.

ing Flour. *Construed* to be for a process and patentable, *held* infringed by the process used in working reissued letters patent No. 5,346, E. P. Welch, April 1, 1873, Middlings Purifier; the use of a flat screen instead of a revolving reel, and of an air current forced against the down-falling meal in place of being forced in the same direction, being a mere matter of form and not of the substance of the process. (p. 334.)

7. It does not detract from the validity of a patent that the inventions of others are made use of in carrying out the patented invention. One invention may include within it many others, and patents for each and all be valid at the same time, but in such case each inventor would be precluded from using the inventions made and patented prior to his own, except by license from the owners thereof. (p. 337.)
8. The patentability of a process is entirely independent of the instrumentalities employed, and it is immaterial whether or not the machinery pointed out as suitable to perform the process be either new or patentable. (p. 337.)
9. A process is a mode of treatment of certain materials to produce a given result ; it is an act or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing, and if new and useful it is patentable. (p. 337.)
10. In the language of the patent law a process is an art. (p. 338.)
11. The process requires that certain things should be done with certain substances and in a certain order ; but the tools to be used in doing this may be of secondary consequence. (p. 338.)
12. Reissued letters patent No. 6,030, Wm. F. Cochrane, August 25, 1874 (original patent No. 37,318, January 6, 1863), Bolting Flour, the last claim *held* infringed. (p. 338.)
13. Letters patent No. 37,319, Wm. F. Cochrane, January 6, 1863. Bolting Flour, and relating specially to the pump, *held* not infringed ; because while defendants' device may be the equivalent of the pump in Cochrane's in the general combination with other elements, yet, when taken by themselves as separate pieces of machinery, they may not be the same, and the use of one is not the infringement of a patent for the other. (p. 338.)
14. Letters patent No. 37,320, Wm. F. Cochrane, January 6, 1863, Bolting Flour, *held* not infringed. (p. 338.)

Syllabus.

15. Reissued letters patent No. 6,594, Wm. F. Cochrane, August 17, 1875 (original patent No. 37,321, January 6, 1863), Bolting Flour, *sustained* as a valid reissue for a claim much narrower than that in the original, and *held* that while the parts of machinery in defendants' apparatus which go to make up the combination, could not when separately considered be regarded as identical or conflicting with those described in the patent, yet having the same purposes in a combination, and effecting that purpose in substantially the same manner, they are the equivalents of each other in that regard, and constitute an infringement. (p. 339.)
16. Reissued letters patent No. 6,595, Wm. F. Cochrane, August 17, 1875 (original patent No. 37,321, January 6, 1863), Bolting Flour, *sustained* as a valid reissue and *held* infringed. (p. 341.)
17. Where it was shown that the invention covered by the domestic patent was actually made before the date of the prior French patent, *held* that by act of 1870, a foreign patent in order to invalidate an American patent must antedate the invention patented. (p. 341.)

[Citations in the opinion of the court:]

Phil. Pat. 379. p. 331.
Livingston v. Van Ingen, 1 Paine, 44. p. 331.
Sullivan v. Redfield, 1 Paine, 441. p. 331.
Goodyear v. Day, 2 Wall., Jr., 283. p. 332.
Sickles v. Gloucester Co., 3 Wall., Jr., 186. p. 332.
Curtis, sec. 332. p. 338.
Foster v. Moore, 1 Curt. C. C. 279. p. 338.

[In dissenting opinion].

Prouty v. Ruggles 16 Pet. 336 [4 Am. & Eng. 351]. p. 342.
Vance v. Campbell, 1 Black, 427 [7 Am. & Eng. 117]. p. 342.
Gill v. Wells, 22 Wall. 1 [9 Am. & Eng. 471]. p. 342.
Howe v. Abbott, 2 Story, C. C., 190. p. 342.
Gould v. Rees, 15 Wall. 187 [9 Am. & Eng. 39]. p. 342.

Appeal from the Supreme Court of the District of Columbia.

The case is fully stated by the court.

The specifications and drawings of the principal Cochrane letters patent and of the Welch patent are as follows:

Statement of the case.

WILLIAM F. COCHRANE, OF SPRINGFIELD, OHIO,
ASSIGNOR TO HIMSELF AND WARDER & CHILD,
OF SAME PLACE.

IMPROVEMENT IN BOLTING FLOUR.

Specification forming part of Letters Patent No. 37,319, dated
January 6, 1863.

CASE C.

To all whom it may concern:

Be it known that I, William F. Cochrane, of Springfield, in the county of Clarke and State of Ohio, have invented certain new and useful Improvements in Bolting-Chests for Flouring-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification, and in which—

Fig. 1 represents a vertical longitudinal section through a bolting-chest embracing my improvements; and Fig. 2, a vertical section through the feed-spout and pump, detached, at the line *x x* of Fig. 1.

It is found by experiment that the process of bolting flour is much facilitated by the use of a current of air to force the flour through the meshes of the bolting-cloths, but this process requires an almost entire remodeling of the machinery heretofore employed for this purpose.

I have ascertained that when the meal is fed to the bolting-reel by a spout or trough of uniform size it has, under certain conditions of atmosphere, a tendency to clog or pack.

It is the object of one branch of my invention to obviate this objection, and to this end my improvement consists, first, in making the spouts which feed the meal in the shape of a frustum of a cone or pyramid, with its smallest end upward, whereby the tendency of the flour to pack in the spout is obviated. When atmospheric pressure is employed

Statement of the case.

to assist the bolting process it becomes necessary to devise some means whereby the meal may be fed to the bolting-reel without permitting the air to escape through the feeding-spout, as such escape would be attended with many inconveniences.

Another branch of my improvement, therefore, relates to certain devices to attain these ends, and my improvements for effecting this purpose consist, secondly, in feeding the meal in a bolting-reel where atmospheric pressure is employed by means of a pump to prevent the air from escaping up the feed-pipe, as such escape would prevent the proper feeding of the reel; thirdly, in making the plunger of the pump to consist of a series of steps or offsets hollowed out or concave on their front sides to cut out the under portion of the meal, and thus to obviate its tendency to pack; fourthly, in a device for varying the quantity of meal fed to the bolt, whereby I am enabled to prevent the reel from choking; fifthly, in combining a flaring feeding-spout with a pump to feed the flour to the reel in the most perfect manner.

To carry out the objects of my invention in the most advantageous way, I have found it necessary to remodel almost entirely the bolting-chests heretofore used.

In the accompanying drawings, which represent a convenient arrangement of parts for carrying out the objects of my invention, my improvements are shown as applied to a series of three reels, arranged one above the other. In this instance the meal is shown as fed from the cooling-floor to the reel by means of a trough or spout, C, which enlarges gradually from one end to the other, as shown in the drawings, to prevent the packing of the meal. A pump, D, is placed across the lower end of the feeding-spout C to feed the meal to the reel. This pump consists of a reciprocating plunger, *d*, playing horizontally in a trough, *d'*, passing through the head of the bolting-reel.

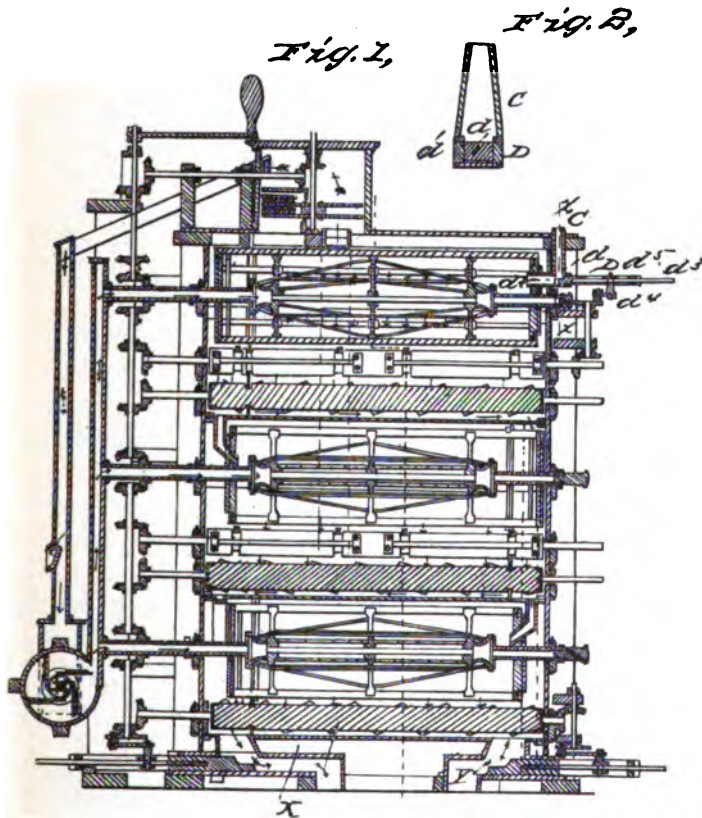
In order to break down the meal more effectually I form a series of offsets or steps, 1 2, in the face of the plunger, as

W. F. COCHRANE.

Bolting Flour.

No. 37,319.

Patented Jan. 6, 1863.



WITNESSES:

Chas. Johnson
J. L. Johnson

INVENTOR

W. F. Cochrane
by his Attorneys
W. P. Johnson

Statement of the case.

shown in Fig. 1 of the drawings. The plunger in this instance is formed of wood, and has a rod, d' , screwed into its hinder end. This rod may pass through a block, d' , in line with the path of the plunger, and act as a guide to it, in which case the pitman may be attached directly to the plunger itself. A better way, however, is to form a circular groove in the rod d' and connect the pitman to a collar, d' , surrounding the rod, by a set-screw passing through the collar and into the groove.

To vary the depth to which the plunger enters the pump-barrel, and consequently the amount of feed, I loosen the set-screw sufficiently to permit the guide-rod to turn freely and screw it into or out of the plunger, and then tighten the screw again.

By means of the pump the reel is regularly supplied with meal, but the escape of the blast-air up the spout is prevented. This same device may be used to discharge the flour and offal from the chest, as well as to feed the meal into it, and is, accordingly, shown as adapted to this purpose in the pumps X Y of Fig. 1. It may also under some circumstances be advantageously employed, even where no blast is used, to assist the bolting.

It is deemed unnecessary here to describe in detail the construction and operation of the other parts of the mechanism, as they form no part of the subject-matter herein claimed, and are, moreover, fully described in sundry other applications for Letters Patent filed simultaneously with this and marked, respectively, "A," "B," and "D."

What I claim under this patent as my invention is—

1. Feeding the meal to the bolting reel by means of a pump, for the purpose set forth.
2. Making steps or offsets 1 2 upon the plunger of the pump, for the purpose described.
3. The combination of the plunger d and screw-rod a' , substantially in the manner described, for the purpose of regulating the amount of feed to the reel.
4. The combination of a flaring feeding-spout with a

Statement of the case.

pump, substantially in the manner described, for the purpose set forth.

In testimony whereof I have hereunto subscribed my name.

WILLIAM F. COCHRANE.

Witnesses:

S. A. BONINAN,
WARDER CUMMING.

EDWARD P. WELCH, OF GEORGETOWN, D. C., ASSIGNOR TO HIMSELF, JAMES H. WELCH, ROSIA W. WELCH, HERBERT P. WELCH, AND JAMES A. MALONEY, OF SAME PLACE.

IMPROVEMENT IN MIDLINGS-PURIFIERS.

Specification forming part of Letters Patent No. 135,953, dated February 18, 1873; Reissue No. 5,346, dated April 1, 1873.

To all whom it may concern:

Be it known that I, Edward Price Welch, of Georgetown, in the District of Columbia, have invented certain new and useful Improvements in Machinery for Purifying Middlings, of which the following is a specification:

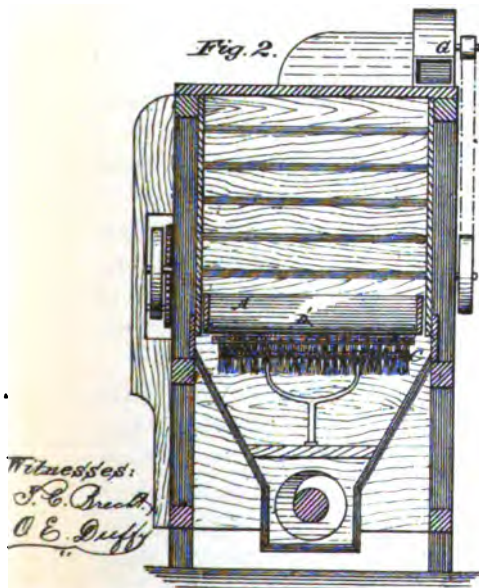
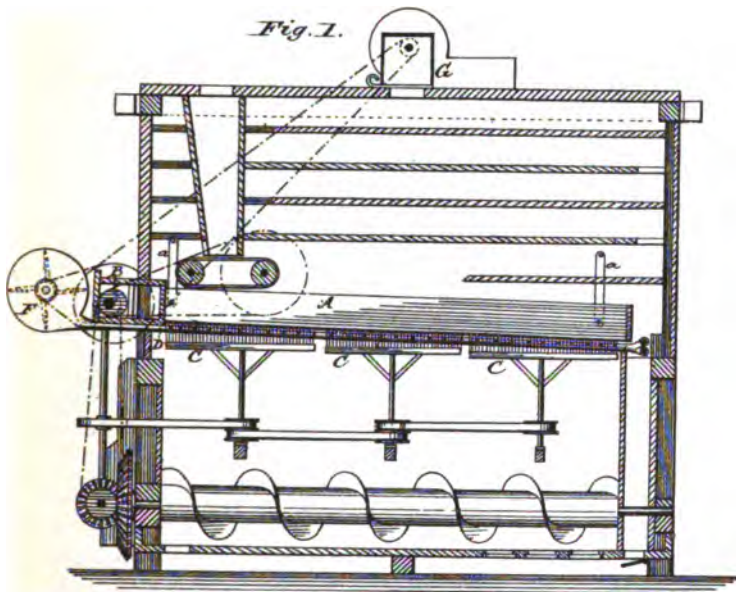
My invention relates to that class of machinery for dressing flour in which a current of air is passed through screens, which sift and separate the various grades of middlings, and a brush is used to clear and keep open the meshes of the screens.

My invention consists, first, in combining, with the screen or sieve, a perforated pipe or pipes, through which a blast of air, independent of the ordinary one passing upward through the sieve, which is also used, is forced, for the purpose of blowing off the fine adhering farina on the under side of the sieve, and for keeping its meshes always open; second, in combining with the above, a rotary brush or

E. P. WELCH.
Middlings Purifiers.

No. 5,346

Reissued April 1, 1873.



Inventor:

E. P. Welch

1

Statement of the case.

brushes, on axes perpendicular to the sieve, so that they may rotate across its face, while the sieve is vibrating across the brush, thus producing a scouring action, which is very effective in entirely clearing the meshes of the sieve from any clogging matter.

In the accompanying drawing, Figure 1 represents a vertical longitudinal section; Fig. 2, a vertical transverse section through a middlings-purifier.

The construction of the various parts of the machine being well understood by skillful constructors of milling machinery, their details need not be particularly described here.

A screen, A, is suspended by radius-links *a*, and vibrated by an eccentric, B, or other suitable means.

Beneath this screen, composed of several numbers of cloths, I mount a rotary brush, C, on an axis perpendicular to the face of the screen, and drive it by suitable belts or gearing, so that it may rotate across the under side of the screen, which at the same time is vibrating across the brush, thus producing a diagonal drawing, scouring movement, which I have found very effective in clearing the meshes of the screen from clogging matter. Any number of brushes desired may be used, according to the size of the screen.

Instead of a simple brush revolving on the axis, roller-brushes might be mounted on horizontal axes in the brush-head, as shown in Fig. 2, so as to have a compound rotating motion—one with the vertical axis, the other on the horizontal axis.

D is an air-pipe extending longitudinally beneath the sieve, having numerous cross-pipes, D', at suitable intervals.

F is a fan-blower, independent of the exhaust-fan G, for forcing air through the pipe D, and its branches D', through numerous small perforations in said pipes, upon and against both the screen and brush, to clear them of obstructions and keep the meshes open.

The brushes, having long and flexible bristles, readily pass over the pipes which are interposed between the brushes and screen.

Statement of the case.

The pipes may be extended around the sides and end of the screen, near the tail end thereof, so as to prevent the too rapid discharge of the material at the tail end.

G is the exhaust-fan for drawing currents of air through the screen, as usual.

The operation of my improved apparatus will readily be understood from the foregoing description.

I do not claim a vibrating screen with a blast passing through it, nor, broadly, the combination of a screen with a clearing-brush.

I claim as my invention—

1. The combination, in a middlings-purifier, of a screen or sieve, through which a blast passes in one direction, while the middlings pass in the other, with auxiliary air-pipe with jets from an independent fan-blower, substantially as hereinbefore set forth, to blow off fine adhering farina, etc., from its under side, to keep the meshes clear and open, and prevent their clogging.

2. The combination, in a middlings-purifier, of a vibrating screen, through which a blast passes in one direction, while the middlings pass in the other, with a brush rotating across the under side of the screen, on an axis substantially perpendicular thereto, substantially as hereinbefore set forth, to produce a drawing action of the brush across the screen diagonal to its line of vibration.

3. The combination, in a middlings-purifier, of a vibrating screen, brushes rotating across the under side of the screen, and perforated air-pipes, to direct streams of air upon the screen and brush, substantially as set forth.

In testimony whereof I have hereunto signed my name.

EDWARD P. WELCH.

Witnesses :

T. C. BRECHT,

O. E. DUFFY.

Statement of the case.

WILLIAM F. COCHRANE, OF LAFAYETTE, IND.,
ASSIGNOR, BY MESNE ASSIGNMENTS, TO HIM-
SELF, BENJAMIN H. WARDER, AND RODNEY
MASON.

IMPROVEMENT IN PROCESSES FOR MANUFACTURING FLOUR.*

Specification forming part of Letters Patent No. 37,317, dated
January 6, 1863 ; Reissue No. 5,841, dated April 21, 1874 ; ap-
plication filed March 4, 1874.

To all whom it may concern :

Be it known that I, William F. Cochrane, of Lafayette,
in the county of Tippecanoe and State of Indiana, formerly
of Springfield, in the county of Clarke and State of Ohio,
have invented a new and useful Improvement in the Art of
Manufacturing Flour, of which the following is a specifica-
tion :

In manufacturing flour, as heretofore practiced, the meal,
after being ground, has generally been conveyed to a cooler,
from which, after it had given up a portion of the heat it
had acquired in grinding, it was spouted into the head of a
reel clothed with wire or silk bolting-cloth, of a sufficient
degree of fineness to permit the sifting through of the fine
particles, and prevent the escape of the coarser ones. As
the meal was agitated in the bolt, the (specifically) heavier
particles would naturally sink to the bottom, while the
(specifically) lighter particles would remain on top. Owing
to this, the fine (specifically) heavier particles first passed
through the meshes of the cloth, constituting what was
graded as superfine flour. As the meal traveled along
the surface of the bolting-cloth, it very soon became impov-
erished of the heavy particles of flour, until, by the time
that it reached a point rarely, if ever, farther than the mid-
dle of the first reel, the impoverishment was so complete
that the lighter impurities began to pass in such quantities

* The drawing of this reissue is identical with that of Fig. 1 of the original
letters patent No. 37,319. p. 291 *ante*.

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as to reduce the grade of the flour below the standard. At this point the flour passing through was cut off, and what passed through the remainder of the first and the whole of the second reel (where a second reel was used) was called "returns," and was carried back either to the hopper-boy and mingled with the fresh meal, or spouted in with the latter into the head of the first reel. By this mode of operation, it is manifest that the meal under treatment in the bolts at any given time after the introduction of the returns contained more than its natural quantity of impurities, so that the system of returns, while it increased the yield, reduced the merchantable quality of the flour, as there would necessarily be more speck in flour thus made than in flour made from the freshly-ground meal in its natural condition as it came from the stones. As the process of impoverishment continued, the material passing through the bolt would become so impure as to be unfit for returns, and at this point another cloth of coarser meshes was introduced, in passing the meal over which the portion of the meal called "middlings" was separated. These middlings consisted of the coarser particles of the flour-producing part of the berry not ground fine enough to pass through the meshes of the finer bolting-cloth with the superfine flour, mixed with a large proportion of pulverulent impurities, resulting from pulverizing portions of the hull of the berry. When the middlings had been taken off, the meal passed onto a still coarser cloth, which separated the "ships" or "ship-stuff." Then another still coarser cloth separated the "shorts," and the "bran" passed off at the tail of the reel. The middlings, ships, shorts, and bran were generally disposed of as "feed." In some mills the middlings were disposed of for purposes of distillation, and in a comparatively few mills the middlings were reground, and either sold as a very inferior grade of flour, or part of the middlings-flour was mixed with the superfine flour in such proportions as could be done without reducing the total product below the standard.

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Many plans had been suggested for improving the quality of flour, and among them the use of currents of air, to be admitted into the interior of the reel through hollow perforated shafts; but, in all the various modes of milling, the end sought for was to keep back the speck, and make the largest possible amount of superfine flour, after which the separations of the offal were immediately made without attempting its purification. After the middlings were re-ground, the middlings-meal was bolted, to improve, if possible, the quality of the middlings flour. As, however, the portion of the hull which formed the speck and dust is very brittle, and by the first grinding made as fine as the flour itself, and capable of passing through the meshes of any cloth through which the flour could be bolted, by regrinding it was only made still finer, and therefore the difficulty of separating it from the valuable portions of the middlings-meal increased.

Another and entirely distinct mode of milling was known as "high" milling. In this mode the grain, when first passed between the stones, was not ground into meal, but merely broken, so that the kernel should be separated from the hull. Separation was then made by means of blasts of air and sieves, and the coarser particles were again and again passed between the stones, and subjected to the action of the sieves and blast until the hard flour-producing portions of the berry could be separated from the hull and then ground into flour.

My invention relates only to the ordinary mode of milling, in which the wheat is reduced to meal by grinding at the beginning of the operation, and then the superfine flour is next separated from the meal. I include under the general term "superfine" flour the flour separated from the meal before the returns are taken out of the meal. Grades of flour were known under the name of "extra" or "fancy;" but prior to the time of my invention these higher grades were made generally by the use of the highest quality of wheat, or by taking off a small portion

Statement of the case.

of the superfine flour which first passed at the head of the reel, and was, therefore, freest from speck and other impurities. The object of my invention was to increase the production of the best quality of flour; and my improvement consisted in separating from the meal first the superfine flour, and then the pulverulent impurities mingled with the flour-production portions of the middlings-meal, so as to make "white" or "purified" middlings, which, when re-ground and rebolted, would yield pure white flour, which, when added to the superfine, would improve the quality of the flour resulting from their union, instead of deteriorating its quality, as had theretofore been the case when the middlings-flour was mingled with the superfine.

I have shown in the accompanying drawings, and in Letters Patent of the United States issued January 6, 1863, and numbered 37,318, 37,319, 37,320, and 37,321, an improved plan of bolting-chests, incorporating means necessary for carrying into operation my improvement in the art of manufacturing flour. Machines constructed as set forth in said Letters Patent are well adapted to work my improvements in the art of manufacturing flour, but, being made the subjects of said patents, are not designed to be covered by this patent, which relates to the improved mode of manufacture, and is not limited to any special arrangement of machinery by which my improved process may be operated. As my process is worked in said machine, the wheat, having first been ground in the ordinary manner, is introduced into the head of the first of a series of bolting-reels, clothed with cloths of progressively-finer meshes, and having introduced into their interior blasts of air, carried through hollow shafts, and discharged through pipes perforated with small holes, and so disposed that the force of the blast shall be caused to act close to the surface of the bolting cloth. The succession of finer cloths tends to delay the escape of the finer and lighter particles until the specifically heavier particles have passed through, constituting the superfine flour. The extent of the series of fine cloths is such that in said

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machines, after the superfine flour has been taken out, there being no longer enough remaining to keep other equally fine but specifically lighter particles away from the cloth, they will, before the meal has reached the tail of the last reel in the series, also pass through its meshes. Instead of "returning" this impure pulverulent material (as in ordinary modes of manufacture) to the head of the first reel, to be mingled with the freshly-ground meal, provision is made in my said machines for carrying it away and storing it separately.

Another agency is at the same time made to assist in the operation of separating the pulverulent impurities from the flour-producing portions of the meal, and thus made to contribute to the accomplishment of my improved mode of manufacture. There is continually a bed of meal in the bottom of the reels, which is in constant agitation as it is lifted up and falls back with the revolution of the reels. As the air-pipes come in succession to their lowest position, they will direct their jets against this mass, and through the falling particles carried up by and falling back from the revolving cloth. These jets, acting on the mass of meal, will separate the specifically lighter particles, and hold them in suspension, carrying away more or less of the finer and lighter particles through the meshes of the cloth, with the currents which are constantly ascending and passing out at the top of the bolting-chest, which is open, while the floor and sides of each reel-compartment are made close. When the residue of the meal is delivered at the tail of the last reel in the series, it is then carried into a separator-reel, clothed in the ordinary manner with cloths of increasing coarseness, and separated into middlings, ships, shorts, and bran. As all these divisions are to some extent arbitrary and only approximate, some of the finest of the ship-stuff will be mingled with the white middlings, but the character of the middlings will be found to differ from the brown middlings produced by former modes of manufacture, these being white middlings mingled with particles of the coarser

Statement of the case.

offal, having been purified by the separation of the finer pulverulent particles in the treatment of the meal in the first series of reels.

It is this intermediate treatment (between the separation of the superfine flour and the completion of the middlings-flour by regrinding and rebolting) for the separation and removal of the pulverulent impurities, which distinguishes my improvement in the art from all before-known modes of manufacture.

The white or purified middlings thus obtained are then reground and rebolted through a series of reels, in all respects like the first described ones, in the following manner: At the tail of the first reel of this series the offal is drawn off, and the middlings-flour which has passed through the meshes of the first reel, is mingled with a suitable amount of coarse offal from the separator and passed through the second and third reels, which are clothed with finer and finer cloths. The finished middlings-flour is here separated, and the remaining offal passing out at the tail of the last reel, is returned to the separator, and the middlings-flour run into a chest by itself, to be either sold separately or mingled with the superfine flour. The offal delivered at the tail of the first middlings-reel, made up of the impurities of the white middlings as they come from the separator, is finished offal and spouted away to the feed-pile. The coarse offal mingled with the middlings-flour, as produced on the first middlings-reel, is added for the purpose of lightening it up, as without the addition of such offal it would not bolt properly.

By this means I produce middlings-flour—not the dark, impure flour heretofore known as middlings-flour, but a flour which may be mingled with the superfine flour first taken out or sold separately.

What I claim as my invention, and desire to secure by Letters Patent, as an improvement in the art of manufacturing flour, is—

The hereinbefore described process for manufacturing flour from the meal of ground wheat, by first taking out the

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superfine flour, and then taking out the pulverulent impurities by subjection to the combined operations of screening and blowing and afterward regrinding and rebolting the purified middlings.

In testimony that I claim the foregoing I have hereunto set my hand this 26th day of December, 1873.

WM. F. COCHRANE.

Witnesses :

R. MASON,

THOS. C. CONNOLLY.

WILLIAM F. COCHRANE, OF LA FAYETTE, IND.,
ASSIGNOR, BY MESNE ASSIGNMENTS, TO HIM-
SELF, BENJAMIN H. WARDER, AND RODNEY
MASON.

IMPROVEMENT IN MACHINES FOR BOLTING FLOUR.

Specification forming part of Letters Patent No. 37,318, dated January 6, 1863 ; Reissue No. 6,030, dated August 25, 1874 ; application filed August 19, 1874.

To all whom it may concern :

Be it known that I, William F. Cochrane, of La Fayette, in the county of Tippecanoe, and State of Indiana, late of Springfield, in the county of Clarke and State of Ohio, have invented new and useful Improvements in Bolting Chests for Flouring Mills ; and I do hereby declare that the following is a specification of the same.

In the annexed drawings, Fig. 1 represents a view in elevation of a bolting-chest embracing my improvements, the panels which inclose the chest being removed to show the mechanism ; Fig. 2, a vertical longitudinal section through the same, the mechanism being shown partly in elevation and partly in section ; and Fig. 3, a vertical transverse section through the fan-case.

Statement of the case.

The mode of bolting flour ordinarily used in mills as heretofore constructed is attended by various difficulties. The meal, when first ground, is always hot and often damp, the heat being caused by the friction of the stones and the dampness by the moisture absorbed by the grain previous to the grinding. The bolting-cloth generally used is made of threads of silk covered with gum, in order to form a smooth polished surface, so that the flour will pass freely through the fine meshes of the cloth. The dampness and heat of the meal have a tendency to soften and dissolve this gum, and make, instead of a polished surface to the thread, a sticky one, to which the particles of flour adhere, and thus close and clog the meshes of the cloth, and also to cause the thread to swell, consequently decreasing the size of the pores. Without ventilation the air confined in the bolting-chest soon becomes heated and surcharged with moisture, which condenses upon the sides of the chest exposed to the influence of the outer atmosphere, thus causing the flour to "dough" or clog the chest or spouts. It is, moreover, found in practice that flour bolts more regularly and in a better manner when the air inside the chest is kept at a certain uniform temperature, which should be sometimes below and at others above that of the external atmosphere.

My invention has reference to that class of bolting-chests in which atmospheric air is forced through the screen for the purpose of facilitating the work of separation. To this end it is important that the screen should be placed in a tight chest, through which an atmospheric current is forced.

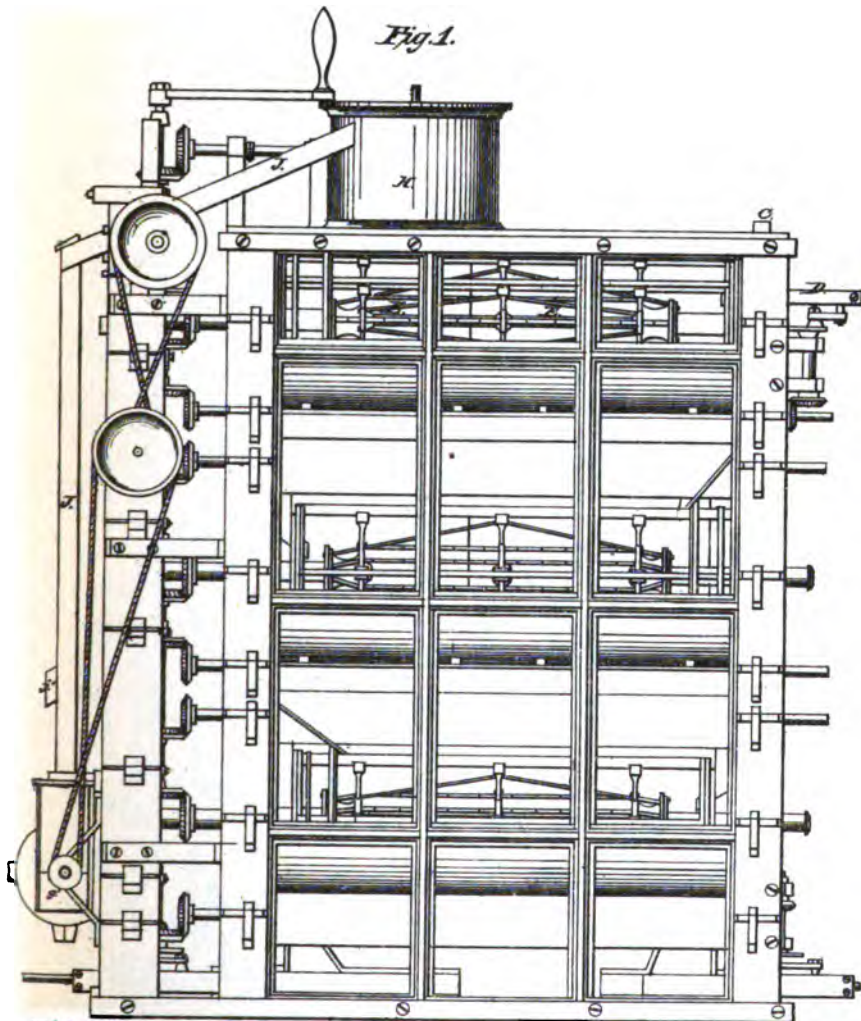
In the case shown in this part of my application, I have shown a fan the pipes of which are so connected with the fan-case that while the blower is forcing in a current of air on one side of the screen the air shall be drawn from the eduction-pipes by suction on the other. By this means I am able to maintain a constant current through the chest, and, by an arrangement of valves in the pipes, to return the whole or a part of the air to the reels, or to allow it all to escape without returning. I also, by the use of the suction,

2 Sheets--Sheet 1.

W. F. COCHRANE.
Machines for Bolting Flour.

No. 6,030.

Released Aug. 25, 1874.



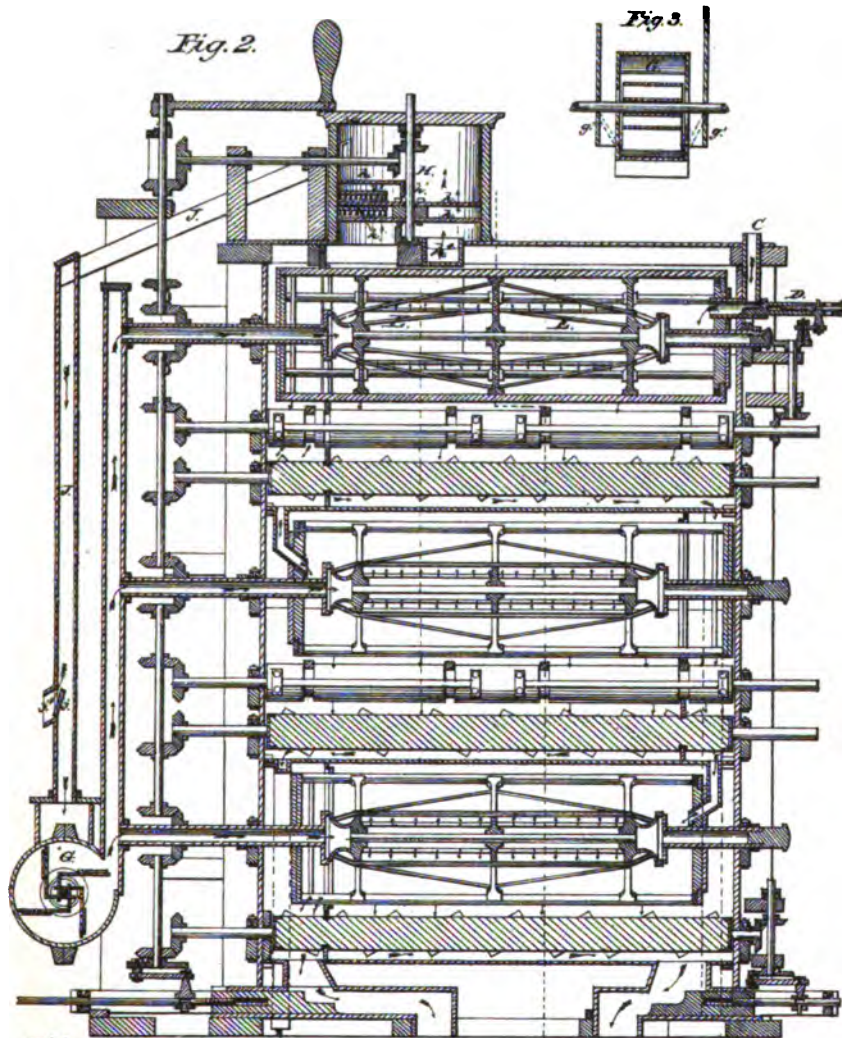
Attest:
Wm. H. Keller

W. F. Cochrane Inventor:
D. S. Holloway & Co
Atty

W. F. COCHRANE,
Machines for Bolting Flour.

No. 6,030.

Reissued Aug. 25, 1874.



Attest:
Alfred
L. H. Keller.

W. F. Cochrane Inventor;
D. R. Holloway & Co
Atty

1

Statement of the case.

relieve the fan from part of the labor of blowing, and thus am enabled to reduce the force of the blast. The current of air will carry along with it a certain portion of the lighter parts of the meal, which would be wasted when the blast escapes into the open air except for a depositing-chamber placed above the chest, where the particles carried up by the blast are separated from the air. Into this separating-chamber the air is induced by the suction-pipe which opens out of it, and as the current will always follow the line of easiest flow the air will escape through the separating-chamber, instead of seeking an escape through any other openings out of the casing, where it would meet with the resistance of the normal pressure of the atmosphere.

The improvements embraced in this patent consist, first, in the means adopted for maintaining a regulated temperature in the chest by returning to the reels the whole or a portion of the air which has passed through the chest; second, in combining, with the suction-pipe and screen, a valve by means of which the force of the suction may be regulated; third, in combining with the screen and blast and suction pipes a separating-chamber placed in the air-education passage, wherein the fine particles of the meal carried up by the blast are separated from the air; fourth, in combining with the screen a perforated blast-pipe and suction-pipe, opening on opposite sides of the screen.

In the accompanying drawings, which represent a convenient arrangement of parts for carrying out the objects of my invention, my improvements are shown as applied to a bolting-chest consisting of three reels, arranged one above the other.

It is deemed unnecessary here to describe in detail the construction and arrangement of the various parts of the mechanism further than may be necessary to explain the construction of such parts as are intended to be covered by this patent, as others parts are fully described in, and covered by, several other patents bearing even date herewith

Statement of the case.

founded upon sundry applications contemporaneously filed by me.

The collection-chamber is shown in this instance as being cylindrical in form and closed at top, but open at bottom. A portion of its area is also covered by a partition, *h*. Two parallel horizontal screens are secured upon a vertical rotating shaft, *h'*, driven by suitable gearing. A series of brushes, *h'*, is secured upon the inner side of the periphery of the cylinder, and projects horizontally therefrom in contact with the revolving screens *h*.

The chamber H communicates directly with the upper reel E, through its open bottom, while the blast-air escapes from the other reels into the chamber through suitable pipes *h'*.

A suction-pipe, J, leads from the chamber above the screen to the fan G. This pipe is provided with a cut-off valve, *j*, so arranged that in one extreme position all the air is forced to return to the fan, while in the other extreme position the ingress to the fan is entirely cut off, and, when fixed in an intermediate position, a portion of the air may be drawn from the chest, and a portion discharged through the opening *j'* in the suction-pipe, at the will of the operator.

The fresh air enters the fan through an opening on each side of the fan-case. The size of these openings is regulated by valves *g'*, Fig. 3. The functions of these valves are very important, as they serve not only to regulate the quantity of fresh air admitted to the reels, but also the force of the blast.

The operation of the machine is as follows: The meal passes through the spout C into the pump D, by which it is injected into the reel E without allowing the air to pass at the same time. The bolting is assisted by a strong blast from the fan entering the reel through the hollow shaft into a bell-mouthed collar, and thence passing into perforated pipes extending out into the space between the shaft and bolting surface, delivering the air in jets. After passing

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through the screens, the air enters the collecting-chamber H, carrying a portion of fine flour with it in the form of dust. The air escapes through the screens *h'* (leaving the fine flour upon them to be returned to the bolting-chamber) into the suction trunk or pipe J, and may be either returned to the fan and through the reels, by closing the opening *j'* by means of the valve *j*, or be allowed to escape directly into the open air by opening that valve, so as to close the suction-pipe. This capability of returning or not returning the air to the reels again is one of great importance, for under certain conditions of atmosphere, such as warm damp weather, if the air be returned to the bolts it will cause the reels to dough, and sometimes even clog the conveyer, as I have found by experience. The air during its passage through the chest takes up the heat from the meal which it has acquired by being ground, so that warm air may be returned to the fan when the external air is too cold. The quantity of external air admitted to the bolt is regulated by opening or closing the valves *g'*, one of which is on each side of the fan, by which means it will be seen that I have the blast perfectly under control. By admitting the air through the perforated pipes on one side of the screen, and placing the suction-pipe on the other, I am enabled to reduce the force required to be given to the blast.

I have described my improvements as applied to a chest consisting of three reels, arranged one above the other; but it is obvious that a greater or less number might be employed, and that the details of my arrangements might be varied to some extent, without departing from the spirit of my invention. Such modification would readily occur to a skilful millwright after reading my specification.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with a flour-bolting chest, a fan and connected air induction and exhaust pipes for maintaining a continuous circulation of air through the chest, substantially as set forth.

Statement of the case.

2. A cast-off valve in the return air-trunk of an atmospheric bolt, for regulating the quantity of warm air returned to the fan, substantially as set forth.

3. In combination with the screen incased in a chest, and blast-induction and suction-eduction pipes, the dust-collecting chamber, substantially as set forth.

4. In combination with the screen incased in a chest, the perforated blast-pipe and the suction-pipe, arranged to operate on opposite sides of the screen, substantially as set forth.

In testimony that I claim the foregoing, I have hereunto set my hand this 18th day of August, 1874.

WM. F. COCHRANE.

Witnesses:

R. MASON,

THOMAS C. CONNOLLY.

WILLIAM F. COCHRANE, OF LA FAYETTE, INDIANA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO HIMSELF, RODNEY MASON AND WILLIAM WARDER.

IMPROVEMENT IN MACHINES FOR BOLTING FLOUR.

Specification forming part of Letters Patent No. 37,321, dated January 6, 1863; Reissue No. 6,029, dated August 25, 1874; Reissue No. 6,594, dated August 17, 1875; application filed July 26, 1875.

DIVISION A.

To all whom it may concern:

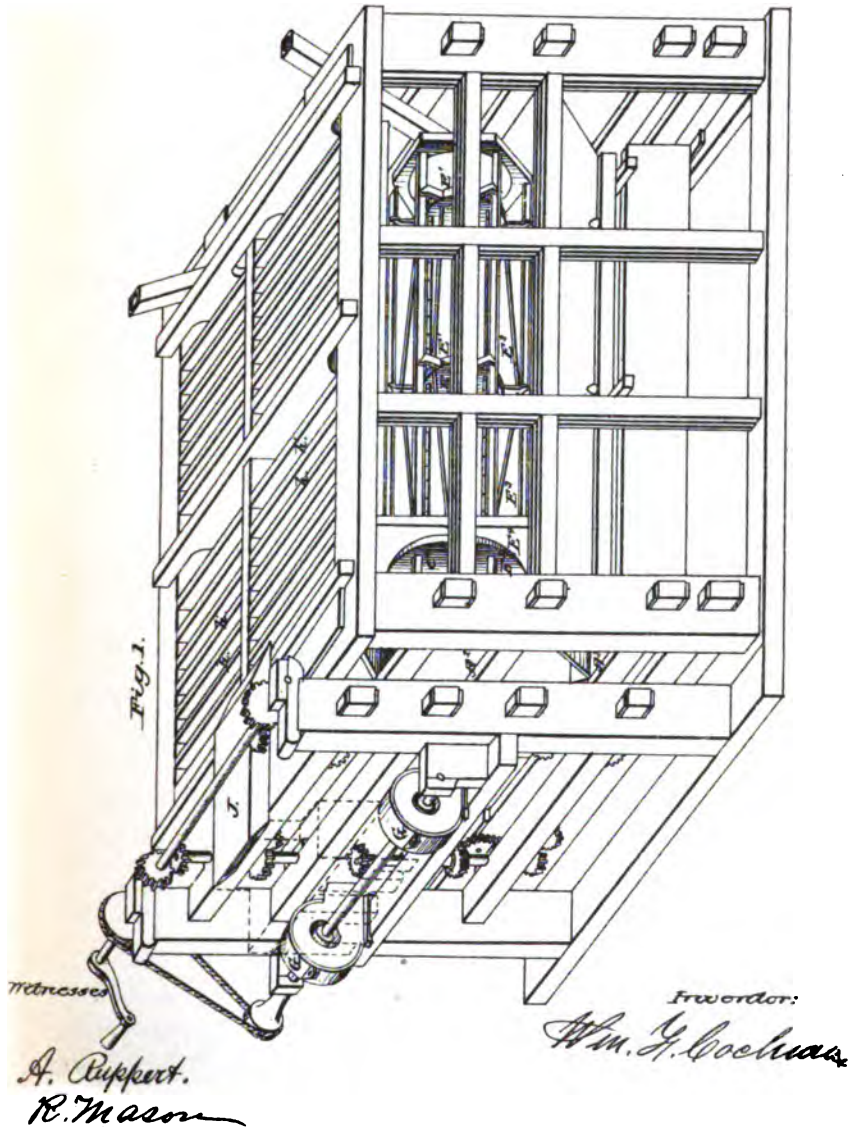
Be it known that I, William F. Cochrane, of La Fayette, in the county of Tippecanoe and State of Indiana, late of Springfield, in the county of Clarke and State of Ohio, have invented new and useful improvements in Machines for

2 Sheets--Sheet 1.

W. F. COCHRANE.
Machine for Bolting Flour.

No. 6,594.

Reissued Aug. 17, 1875.



Statement of the case.

Bolting Flour; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, in which—

Fig. 1 is a perspective view with the panels removed to show the interior structure, and Fig. 2 is a vertical longitudinal section.

In manufacturing flour heretofore screens or bolts have been employed, consisting of a frame covered with a reticulated cloth of wire or threads of silk, the latter being covered with a gum for the purpose of making the thread firm, and thus maintaining the uniformity of the interstices; but, as the heat and vapor evolved in the operation of grinding the grain into meal tend to soften this gum, it has been a frequent source of embarrassment to the miller that his cloths become "clouded" by the adhesion of fine particles of the meal, so that resort has been had to brushes and currents of atmospheric air for the purpose of keeping the meshes clear.

In the use of atmospheric bolts it is obvious that, if the air is allowed to escape freely, there will be much of the finer portion of the meal carried away by the blast and wasted, and this loss has heretofore prevented the general use of such bolts, notwithstanding the obvious advantages attending such a use of the air.

To avoid this difficulty is the main purpose of my invention, as illustrated in this case, and in other patents founded upon applications simultaneously filed.

To this end the invention embraced in this patent consists, first, in combining with the bolt and blast-pipes, and mechanism for allowing the meal to pass without the air passing therewith at the same time, a collecting-chamber placed in the air-eduction passages for causing the deposition of the light particles carried with the current before the final escape of the air. In this case the eduction-pipe opens out of the collecting-chamber, so that the air, before being returned, may be purified by deposition of the heavier particles, which

Statement of the case.

may be returned to the bolting-chest or carried away, according to circumstances, at the will of the operator.

This part of my invention consists, therefore, secondly, in combining, with the screen and blast and suction pipes, a collecting or deposit chamber in the air-eduction passages, wherein the specifically heavier particles carried out of the chest with the atmospheric current are deposited in the dead-air corners by gravity.

In this connection I wish to state that I do not wish to claim in this patent, broadly, in this combination, all forms of a separation or collecting-chamber, as another form of collection-chamber is shown and claimed as an element in a combination in another patent of even date, but merely for a deposit-chamber in which the separation is made by gravity.

To carry out the objects of my invention in the most perfect manner, I have found it necessary to remodel almost entirely the bolting-chests heretofore used. I construct the frame of the bolting-chest of stout timbers, united by mortises and tenons, and held together by screws or bolts in such manner as to admit of their being readily taken apart or put together again. Above the chest I construct a chamber extending the whole length of the frame. This chamber is divided into numerous cells or compartments by means of transverse partitions, having alternately open spaces at top and bottom.

As the air escapes from the reel it enters this chamber and passes through each of the cells, being alternately deflected upward and downward by the partitions, in order that the fine flour carried off from the reel-chambers by the blast may be deposited. A pump or valve in the bottom of the chamber discharges the fine flour thus deposited either directly into a trough or into the reel-chamber, without in either case permitting the return or escape of the blast through the valve.

In the accompany drawings, which represent a convenient arrangement of parts for carrying out the objects of my in-

Statement of the case.

vention, my improvements are shown as applied to a bolting-chest consisting of two reels arranged side by side.

As the construction is the same in both, a description of one will be sufficient.

The reel in this instance extends the whole length of the chest, and turns freely in bearings in the bridge-trees A'. The central shaft E, upon which the reel is supported, is solid, except at the end nearest the driving-gear, which end is hollow and bell-shaped inside of the bearing. Heads or spiders E' are arranged upon the shaft E at right angles thereto, and are firmly braced and united by tie-rods E". A series of perforated tubes are arranged around the central shaft. These tubes E' in this instance are open at one end only, these open ends being inserted into the bell-mouth E'. The bolting-cloths are secured to ribs E', inserted into slots in the reel-arms E'.

Air is supplied to the reel in the following manner: The end of the reel-shaft nearest the driving-gear is hollow, and forms a close joint with the end of an air-tube, Q, leading from a fan, G; the shaft revolves freely, but the air-tube is stationary. The reel-chamber is divided into two compartments, of unequal size, by a partition, E', which encircles the reel, and fits snugly in a flanged wing, e', upon it. The larger of these two compartments is for the reception of the fine flour, which passes through the bolting-cloths, while the smaller one forms a dead-air chamber, E", into which the tailings or offal falls, a portion of the tail end of the reel being left open for that purpose.

The collecting-chamber H is divided into a number of compartments or cells by means of the transverse partitions h h'. The partitions h fit closely to the top of the chest, but do not extend quite to the bottom of the chamber, while the others, h', are secured to the bottom, but do not reach the top, their lower edges being inserted into grooves into the valve-shaft I. The current of air passes from the bolting-chamber through an opening behind the spout C, which feeds the reel and enters the collecting-chamber, through

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which it passes, being alternately deflected upward and downward by the partitions h h' , thus forming eddies, which causes the flour or dust to settle in the cells upon the valve-shaft I, by which it is discharged.

The valve I, in this instance, consists of a rotating shaft, fitting accurately and turning freely in two concave blocks, whose inner sides are curved to suit it. The shaft I has a long slot cut entirely through it, into which a board, i' , fits. The width of this board is somewhat less than the diameter of the shaft, and it fits closely in the slot, but is free to reciprocate transversely in it. Shallow annular channels or grooves i'' are cut into the shaft at intervals. Brackets i'' , curved on their under sides, near their centers, to correspond with the grooves i'' , are secured upon the base-boards or concave blocks, and serve to hold the shaft and blocks together, and as a guide or cam to work the reciprocating board or plunger i' . The arrangement of the brackets is such that, when the plunger-board i' is vertical, a cavity or channel, in which the fine flour is deposited, is left in the upper side of the shaft; but when the shaft revolves the board is pressed down, leaving a similar channel on the upper side, now uppermost and forcing out the fine flour into a trough or conveyer below, through an opening between the concave blocks. In the present instance, however, for convenience of construction, the fine flour thus collected is dropped by the valve directly into the reel-chamber, where it mingles with the other flour.

After passing the whole length of the collecting-chamber the current of blast air may enter the air-trunk J, which leads to the fan G, and again be returned to the reel, or it may be permitted to escape at once to the open air.

The meal is supplied to the screen by means of a plunger (shown at X, Fig. 2), which takes it from the mouth of the supply-pipe and passes it into the bolting-chest against the pressure of the air by a positive feed. As the feed-pipe above the pump is vertical it will be filled with meal, which will prevent the escape of the air, while the reciprocating

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action of the plunger will cause the meal to be fed into the bolting-cloth without permitting the air to pass at the same time.

It is unnecessary herein more specifically to describe the construction of the pump, as that is fully shown in and covered by Patent No. 37,319 (another division of the original application), and it forms no part in itself of the present case.

Another feed-valve is illustrated by the roller I, which is used to feed the fine particles from the collecting-chamber into the chest or into the trough, whence it is conveyed away without permitting the escape of the air. The meal is delivered out of the chest by a shaft-valve, Y, in all respects like the valve I, herein fully described, and need not be more particularly referred to, as it is fully shown and broadly covered by Patent No. 37,320 (another division of said original application), and it forms in itself no part of the present case. Its construction must be such as to permit the escape of the flour by a positive discharge without allowing the air to pass at the same time.

It is deemed unnecessary to describe in detail the construction and operation of the other parts of the mechanism, as they form no part of the subject-matter herein claimed, and are, moreover, fully described in other applications filed simultaneously, and marked, respectively, A, B, C, and D.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In combination with the bolt and air-pipes and valves for feeding and delivering without allowing the air to pass therewith, the collecting-chamber for simultaneously feeding, separating, and delivering the flour, while the light particles carried with the current are deposited, and the blast continuously maintained, substantially as set forth.

2. In combination with the screen and blast and suction-pipes, the collecting or deposit chamber, wherein dead-air spaces are formed for the deposition of the specifically-

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heavier particles carried up by the atmospheric currents by gravity, substantially as set forth.

3. In combination with the screen and fan for inducing air-currents through the screen, the trapped feed, which prevents the passage of the air at the same time that it admits the meal to the chest, and the collecting or deposit chamber through which the the air is forced, wherein the solid particles carried out by the current are deposited by gravity in the dead-air spaces, substantially as fet forth.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

W. F. COCHRANE.

Signed in presence of—

W. A. CASWELL,

R. MASON.

Messrs. W. S. Cox, Charles T. Blake and Rodney Mason, for appellants :

Cochrane's great discovery was that by subjecting the middlings to the action of screens and air blasts they could be made white and pure, and that in this shape they would make excellent flour. He first proposed to do this in a separate reel. Afterwards, adopting a more perfect system with a view to perfecting the manufacture, he fully succeeded. A new process of middlings purification is the subject of a reissue in No. 5,841.

Many patents for process, independent of particular machinery have been granted and sustained in England and America.

Hartley's Patent. 1 Webster's Patent Cases, 55 ; Boulton v. Bull, 2 H. Bl. 492 [1 Am. & Eng. 59.] ; Hall v. Jarvis, Webster's Pat. Cases, 100 ; Neilson v. Howard, Webster's Pat. Cases, 242 ; Crane v. Price, Webster's Pat. Cases, 393 [3 Am. & Eng. 437] ; Forsyth v. Riviere, Webster's Pat. Cases, 97 ; Bovill v. Keyworth, Ell. and Bl. Q. B. 724 ; Curt. on Pats., Section 144, 145 ; Le Roy v. Tatham, 14 How. 171 [5 Am. & Eng. 313], 22 How. 132 [7 Am. & Eng. 29.] O'Reilly v. Morse, 15 How. 62 [5 Am. & Eng. 483.]

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His invention did not consist of the new machinery. It is very clearly shown in the proofs that in the old system of milling a certain and very valuable part of the grain was lost by the then method of treating the meal. Instrumentalities for removing refuse from grain were various and very old, but in the use of these a loss occurred. Cochrane took these old instrumentalities, improved them and used them as no one else ever did, and obtained a new result, the saving of that part of the berry which hitherto had been lost with the middlings. But his bolts were old and his invention consisted in what he did with them. He was the first who separated out and purified the middlings. He ground them and bolted them precisely as other parts of the meal were ground and bolted, and under the doctrine of double use he could not claim the old machine to grind and bolt a new material in the same way in which they ground and bolted the old materials. No one had ever done this before. And, looking at the statute as construed by the courts, we find that new modes of doing things are perfectly well established subjects of patents.

Mr. Cochrane stands almost alone among the entire list of inventors in this, that his invention stands absolutely without antecedents. All authority goes to show that such inventors are entitled to the highest degree of protection. *Talcott v. McCormick*, 20 How. 402 [6 Am. & Eng. 410].

The machines of defendant include the same mechanical devices, as substitutes which were the well-known equivalents of the devices employed by Cochrane, effecting the same mechanical results. In both we have a feed-pipe kept normally filled with meal so that the air cannot escape up the pipe, and in both a moving conveyor to transfer the meal from the lower end of the pipe to the bolter. In Cochrane's machine this is a reciprocating plunger, carrying the meal with its forward movement. In defendant's it is an endless belt carrying the meal with its continuous forward movement and Mr. Renwick (question 6), says that the end-

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less belt was the well known equivalent for the plunger-conveyor long prior to Cochrane's patent.

A patent can only be invalidated on account of another patent or printed publication when the subject matter was patented or so described *prior to the invention or discovery* thereof by the American patentee.

Rev. Stats., Sec. 4920 ; *Bartholomew v. Sawyer*, 1 Fish. 516 ; *Judson v. Cope*, 1 Fish. 615 ; *Howe v. Morton*, 1 Fish. 586 ; *White v. Allen*, 2 Fish. 440.

The law defining the jurisdiction of the Supreme Court of the District of Columbia gives to that court jurisdiction of suits upon patents as defined in the recited sections of the Revised Statutes ; section 4921 confers upon all courts having jurisdiction of patent suits general equity power ; and upon the statute it cannot be contended that the court below had not full power to entertain a determined suit.

It should be noted that the section of the Revised Statutes for the District of Columbia places suits in equity and at law upon an equal footing.

The language of the act is "solely in equity as at law," thus removing from the system of patent legislation the ancient preference of our jurisprudence for common law proceedings.

Messrs. A. L. Merriman and H. C. Cady, for appellees :

If the appellants have anything of real value it is in Cochrane's process. Upon this process patent they evidently depended and failed in the contest below. But little effort was made touching the remaining issues and reissues, which, by way of distinction, may be classified as the mechanical patents. Now, however, these mechanical patents are to be brought up as a forlorn hope upon the theory that the parts used by these respondents, and shown in the Welch patent are the equivalents of those shown by Cochrane and set up in plaintiff's bill.

But the radical distinction between the old mode and

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new process, and the results before stated, show that the mechanical devices used are not equivalents. They are different in form; they are different in their results. They relate to a different machine, acting differently and producing, one "fine flour" as it was called that is to say, flour mainly from the head of the bolt, composed largely of the starchy part of the berry—the other, flour from the middlings entire, and treated in a separate machine.

The court below dismissed the bill upon the ground that the complainants had not presented such a case upon the pleadings and proofs gave the Court of Equity jurisdiction.

It is well established in equity jurisprudence that a Court of Equity has jurisdiction only when there is no adequate remedy at law, and this principle has been succinctly declared by Congress, which thus defines its jurisdiction: "Suits in equity shall not be sustained in either of the courts of the United States in any case when a plain, adequate and complete remedy may be had at law." Rev. Stats., sec. 723.

Before a patentee can have an injunction he must show an exclusive enjoyment long enough to justify the presumption of a right or an incontrovertible right.

Hilliard on Inj. 401.

The simple charge of infringement gives the Court of Equity no jurisdiction. Sec. 449, Rev. Stats., provides a remedy for infringements of patents by action on the case, with power in the court to assess damages in cases of the actual damage as a penalty. The only statutory power given to Courts of Equity is to grant injunctions according to the course and principles of equity.

If objections be made that the question of jurisdiction should have been specifically raised in the pleadings, we reply that aside from the fact that the answer makes a reservation of all cause of demurrer, and also that the court below considered this question in connection with the facts proven, the question of jurisdiction, and apparent upon the face of the bill, may be introduced judicially by the court at any stage of the proceedings.

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Woodman v. Freeman, 25 Maine, 531 ; Heriot v. Davis, 2 Wood. & Minot, 230 ; U. S. v. New Bedford Bridge Co., 1 Wood. & Minot, 406 ; Jackson v. Ashton, 8 Pet. 149.

The Court of Equity is of limited jurisdiction, and it has now no original jurisdiction conferred upon it in actions for infringement of patents, for which actions the statute has expressly provided a remedy at law.

The court below sitting as a jury having found the facts in favor of the defendants as well as the law, such findings will not be reviewed by this court.

Mr. Justice BRADLEY delivered the opinion of the court :

This is a suit in equity, instituted in the Supreme Court of the District of Columbia for injunction and relief against an alleged infringement of various patents belonging to the complainants. The bill was dismissed and the complainants have appealed.

The patents sued on are six in number, originally five, granted to the appellant Cochrane on the 13th of January, 1863, and numbered respectively 37,317, 37,318, 37,319, 37,320, and 37,321. They all related to an improved method of bolting flour, the first being for the general process ; and the others for improvements in the different parts of machinery rendered necessary in carrying on the process. Three of the original patents, Nos. 37,317, 37,318 and 37,321, were surrendered and reissues taken in 1874, which reissues were numbered 5,841, 6,029, and 6,030, the first being for the process, and the other two for portions of the machinery. Reissues 6,029, being in place of the original patent numbered 37,321, was also subsequently surrendered, and two new reissued patents substituted therefor, numbered 6,594 and 6,595.

The case has been mainly argued on the question of infringement, the defendants using a bolting apparatus constructed according to letters patent issued to Edward P. Welch in April, 1873, for improvements upon machines pat-

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ented to Jesse B. Wheeler and Ransom S. Reynolds, which, as well as the process employed, they contend, are radically different from the apparatus and process of Cochrane.

A preliminary question is raised, with regard to the jurisdiction of the court below to hear the case on a bill in equity, before a determination of the rights of the parties in an action at law.

The powers of the Supreme Court of the District of Columbia in patent cases are the same as those of the Circuit Courts of the United States. See Revised Statutes, relating to the District of Columbia, secs. 760, 764.

The Circuit Courts were first invested with equity jurisdiction in patent cases by the Act of Feb. 15, 1819 (*a*), which declared that these courts should have "Original cognizance, as well in equity as at law, of all actions, suits, controversies, and cases arising under any law of the United States, granting or confirming to authors or inventors the exclusive right to their respective writings, inventions and discoveries; and upon any bill in equity, filed by any party aggrieved in any such cases, should have authority to grant injunctions, according to the course and principles of courts of equity," etc.

This law was substantially re-enacted in the 17th section of the Patent Law of July 4, 1836 (*b*), and the 55th section of that of July 8, 1870 (*c*), special powers to assess damages in equity cases being also conferred by the latter Act.

Before the Act of 1819 was passed, the Circuit Courts had cognizance of actions at law brought to recover damages for the infringement of patents, but not of the suits in equity in relation thereto, unless the parties happened to be citizens of different States. Phil. Pat. 379; *Livingston v. Van Ingen*, 1 Paine, 54; *Sullivan v. Redfield*, 1 Paine, 447. Under that Act and the subsequent Acts in which it became incorporated, bills in equity for injunction, discovery and

94 U. S. 782.

(*a*) Otto inserts "3 Stat. at L., 481."

(*b*) Otto inserts "5 Stat. at L., 117."

(*c*) Otto inserts "16 Stat. at L., 198."

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account have constantly been sustained, frequently without any previous action at law. As said by Mr. Justice Grier, in a case decided at the Circuit: "It is true that, in England, the chancellor will generally not grant a final and perpetual injunction in patent cases, when the answer denies the validity of the patent, without sending the parties to law to have that question decided. But even there the rule is not universal; it is a practice founded more on convenience than necessity. It always rests on the sound discretion of the court. A trial at law is ordered by a chancellor to inform his conscience, not because either party may demand it as a right, or that a court of equity is incompetent to judge of questions of fact or of legal titles. In the United States, the practice is by no means so general as in England." *Goodyear v. Day*, 2 Wall., Jr., 296. Subsequently in the case of *Sickles v. Gloucester Co.*, 3 Wall., Jr., 196, the same judge said: "The courts of the United States have their jurisdiction over controversies of this nature by statute, and do not exercise it merely as ancillary to a court of law." And after quoting the statute, he proceeds: "Having such original cognizance * * * the courts of the United States do not, in all cases, require a verdict at law on the title, before granting a final injunction, or concede a right to every party to have every issue as to originality or infringement tried by jury."

The position of Mr. Justice Grier is undoubtedly true, that whether a case shall be first tried at law is a matter of discretion, and not of jurisdiction; and in this matter the courts of the United States, sitting as courts of equity in patent cases, are much less disposed than the English courts are to send parties to a jury before assuming to decide upon the merits.

But the counsel for the defendants suggest that the revised statutes have not preserved in entirety the previous enactments on this subject, but have omitted the vesting of original cognizance in the Circuit Courts sitting as

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courts of equity in patent cases. From a careful consideration, however, of all the sections of the revised statutes on the subject, we think that no intention is evinced to make any change in the law. The original enactments are separated into distinct parts, and somewhat condensed; but the substance of them is retained. By section 629, the Circuit Courts are invested with jurisdiction, among other things: "Ninth, of all suits at law or in equity arising under the patent or copyright laws of the United States." And, by section 4921, it is declared, that "The several courts vested with jurisdiction of cases arising under the patent laws shall have power to grant injunctions according to the course and principles of courts of equity," etc., following precisely the language used in the Act of 1870, the last previous revision of this branch of the law. The grant of jurisdiction is as broad and general as it could well be, and the mode of exercising it is prescribed in precisely the same terms as in previous statutes.

In the present case, we see no special reason for sending the case to a court of law or to a jury for trial. There are no such issues depending upon the credibility of witnesses, or on the intricacy of machinery, as to make the case susceptible of easier solution or greater certainty as to the truth, before such a tribunal, than it admits of when presented to the consideration of a chancellor. It would, perhaps, be desirable, if all cases of this sort could be referred to a commission of intelligent experts and practical men to report their opinion thereon, with their reasons, for the final action of the court. A proceeding of this kind was probably in the mind of Congress in passing the act of Feb. 16, 1875, authorizing a reference to a jury of five persons. Neither courts nor ordinary juries are perfectly adapted to the investigation of mechanical and scientific questions. The court below, however, exercised its discretion to decide the case upon its merits, without the aid of a jury of any sort, and their action is not a ground of appeal.

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If we were convinced, however, that the case was not properly decided, and could not be properly decided without such a reference, we might undoubtedly, in the exercise of our own discretion, remand it to the court below for that purpose. But we see nothing in the questions raised which requires that such a course should be adopted.

x The principal patent sued on in this case was granted on the 21st of April, 1874, being a reissue of a patent granted to William F. Cochrane on the 6th of January, 1863. The original patent was numbered 37,317, and the reissue 5,841. The alleged invention is for a process in manufacturing flour. The patentee, in his specification, says: "The object of my invention was to increase the production of the best quality of flour; and my improvement consisted in separating from the meal, first the superfine flour and then the pulverulent impurities mingled with the flour producing portions of the middlings meal, so as to make 'white' or 'purified' middlings, which, when reground and rebolted, would yield pure white flour, which, when added to the superfine, would improve the quality of the flour resulting from their union, instead of deteriorating its quality, as had heretofore been the case when the middlings flour was mingled with the superfine." The process employed for producing the result here indicated is then described. It consists in passing the ground meal through a series of bolting-reels clothed with cloth of progressively finer meshes, which pass the superfine flour and retard the escape of the finer and lighter impurities; and, at the same time, subjecting the meal to blasts or currents of air introduced by hollow perforated shafts furnished with pipes so disposed that the force of the blast may act close to the surface of the bolting cloth; the bolting-chest having an opening at the top for the escape of the air, and of the finer and lighter particles therewith, through a chamber where the particles are arrested, whilst the floor and sides of each compartment of the chest are made close, so as to prevent the escape of the

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air in any other direction than through the said opening. By this means, the superfine flour is separated, and the fine and light specks and impurities, which ordinarily adhere to the middlings and degrade the flour produced therefrom, are got rid of ; and when the middlings are now separated from the other portions of the meal, they are white and clean, and capable of being reground and rebolted, so as to produce superfine flour equal in quality and even superior to the first instalment.

This is the process described ; but the patentee claims that it is not limited to any special arrangement of machinery. He admits the prior use of currents of air in the interior of the reels, introduced by means of hollow, perforated shafts, for the purpose of keeping back the speck, and increasing the quantity of superfine flour ; but not for purifying the middlings preparatory to regrinding. His improvement, therefore, does not consist in using drafts and currents of air, but in the process as a whole, comprising the application of the blast, and the carrying off of the fine impurities, whereby the middlings are purified preparatory to regrinding after being separated from the other parts.

The defendants deny that they use this process. They the purify middlings of the flour, as before stated, by means of machines constructed according to letters patent issued to Edward P. Welch, in April, 1873, for improvements upon machines patented to Jesse B. Wheeler and Ransom S. Reynolds.

In this process, reels are not used for purifying the middlings, but a flat and slightly inclined vibrating screen or sieve is used for the purpose ; over which the ground meal is passed, and whilst passing is subjected to currents of air blown through a series of pipes situated close underneath the screen ; which currents pass up through the screen and through an opening at the top of the chest into a chamber, carrying with them the finer and lighter impurities, whereby the middlings are rendered clean and white, and capable

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of being reground into superfine flour. The bolting-chest is made tight and close on all sides except the opening at the top, so that the currents of air may be forced to escape by that exit.

Now, except in the use of a flat sieve or screen in place of reels, it is difficult to see any substantial difference between these two methods. The defendants use, in addition, brushes, which revolve on the under side of the screen, so as to keep the meshes thereof constantly clean and free; but this is merely an addition, which does not affect the identity of the two processes in other particulars. We have substantially the same method of cleaning the middlings preparatory to regrinding by means of currents of air passed through them whilst being bolted, and whilst being confined in a close chest or chamber, said chamber having an opening above for the escape of said currents of air and the impurities with which they become loaded. The middlings being thus purified are reground and rebolted, producing a superfine flour of superior grade; a new, useful and highly valuable result.

The use of a flat screen instead of a revolving reel for bolting and cleaning the middlings is a mere matter of form. It may be an improved form and, perhaps, patentable as an improvement; but is at most an improvement.

The forcing of the air-currents upward through the screen and film of meal carried on it and against the downward fall of the meal, instead of forcing them through the bolting-cloth in the same direction with the meal, is also a mere matter of form, and does not belong to the substance of the process. The substantial operation of the currents of air in both cases is to take up the light impurities and bear them away on the aggregate current through the open flue, and thus to separate them from the middlings. This, too, may be an improvement on Cochrane's method; but it is only an improvement.

The defendants admit that the process has produced a

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revolution in the manufacture of flour; but they attribute that revolution to their improvements. It may be as they say, that it is greatly due to these. But it cannot be seriously denied that Cochrane's invention lies at the bottom of these improvements, is involved in them, and was itself capable of beneficial use, and was put to such use. It had all the elements and circumstances necessary for sustaining the patent, and cannot be appropriated by the defendants, even though supplemented by and enveloped in very important and material improvements of their own.

We do not perceive that the patent of Cogswell and McKiernan, if valid at all as against Cochrane (a point which will be more fully considered hereafter), affects the question in the least. That patent is not at all for the process which Cochrane claims. If valid, and if, in using his process, Cochrane is obliged to use any device secured to Cogswell and McKiernan, it does not detract in the slightest degree from his own patent. One invention may include within it many others, and each and all may be valid at the same time. This only consequence follows: that each inventor is precluded from using inventions made and patented prior to his own, except by license from the owners thereof. His invention and his patent are equally entitled to protection from infringement, as if they were independent of any connection with them.

That a process may be patentable, irrespective of the particular form of the instrumentalities used, cannot be disputed. If one of the steps of a process be that a certain substance is to be reduced to a powder, it may not be at all material what instrument or machinery is used to effect that object, whether a hammer, a pestle and mortar or a mill. Either may be pointed out; but if the patent is not confined to that particular tool or machine, the use of the others would be an infringement, the general process being the same. A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of

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acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as is a piece of machinery. In the language of the patent law, it is an art. The machinery pointed out as suitable to perform the process may or may not be new or patentable; whilst the process itself may be altogether new, and produce an entirely new result. The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.

The machine patents come next to be considered.

As to No. 6,030, which is a reissue of the original patent No. 37,318, the defendants clearly infringe, at least, the last claim, which is in these words: "In combination with the screen incased in a chest, the perforated blast pipe and the suction-pipe, arranged to operate on opposite sides of the screen, substantially as set forth."

As to the patent next in order, namely: the original patent No. 37,319, which relates specially to the use of what the patentee calls the *pump* for introducing the meal into the chest and reels, whilst the valve arrangement used by the defendants may be an equivalent in the general combination with the said pump described by Cochrane, yet, taken by themselves, as separate pieces of machinery, they are not the same, and the use of the one is not an infringement of a patent for the other. Curtis, sec. 332; Foster v. Moore, 1 Curt. C. C., 279. Nor can we perceive that the defendants infringe the next patent, No. 37,320, which is for certain combinations of machinery, including the bolting-reels, dead-air chambers therein, slotted shaft, and reciprocating board for discharging the meal, etc., which it is unnecessary to describe more particularly.

The two remaining patents, numbered 6,594 and 6,595, being reissues of original patent No. 37,321, are for combinations of essential parts of the machinery required for bolting flour and purifying the middlings according to the

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general process described in the first patent. The principal claim of the original patent was for the condensing or collecting chamber, through which the currents of air, on leaving the bolting chest, make their escape, and where they leave the fine particles with which they become loaded. This claim, it is said, was found to be too broad, inasmuch as a collecting chamber, somewhat similar, had been used in another connection, though not in the combinations presented in Cochrane's bolting process. The original patent, therefore, was surrendered, and the two patents now under consideration were issued in place thereof, claiming the use of the collecting chamber in combination with the various material parts of the bolting apparatus. The reissue No. 6,594, contains three claims, and No. 6,595, one claim.

The first claim of reissue No. 6,594 is for the collecting-chamber (used for the purpose aforesaid) in combination with the bolter, air-pipes and valves for feeding and delivering the meal without allowing the air to pass therewith. Now, although the defendants use a flat bolter instead of a reel, and use different kinds of valves for feeding and delivering the meal without allowing the air to pass, yet they employ the combination of devices described in this claim. They use the collecting-chamber for the same purpose as that pointed out in the patent, and use it in connection with a bolter, air-pipes and valves for feeding and delivering the meal without allowing the air to pass therewith, each effecting the same separate purpose, and all combined effecting the same general purpose, which the like parts are intended to accomplish in Cochrane's bolting apparatus. Though some of the corresponding parts of the machinery, designated in this combination, are not the same in point of form in the two bolting apparatuses and, separately considered, could not be regarded as identical or conflicting, yet having the same purpose in the combination, and effecting that purpose in substantially the same manner, they are the equivalents of each other in that regard. The claim of the patent

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is not confined to any particular form of apparatus, but (in regard to the valves, for example) embraces generally any valves for feeding and delivering the meal without allowing the air to pass through. We are of opinion, therefore, that the combination here claimed is infringed by the apparatus used by the defendants.

It is unnecessary to make a separate examination of the other claims embraced in the two patents under consideration. They are all susceptible of the same observations which we have made with regard to the first claim. In our opinion, the defendants do infringe them.

But a question is raised with regard to Cochrane's priority of invention. A patent was granted on the 12th of June, 1860, to Mortimer C. Cogswell and John McKiernan for improvements in ventilated bolting-chests, which, it is contended, antedates and nullifies Cochrane's apparatus as patented to him in the original patent 37,321, and in the two reissues thereof before mentioned. This patent (of Cogswell and McKiernan), we have examined, and find that it does contain five of the elements embraced in those reissues, namely: (besides the bolting-chest and bolter, which are always used), it contains the perforated air pipe extending inside of the bolting-reel, the fan for producing a blast of air therein, and a collecting chamber for arresting the flour carried off by the blast. The purpose was simply to cool the meal and keep the bolting cloths dry. The flour which collected in the chamber was returned to the chest. The parts contained in this apparatus are those which are patented in combination in Cochrane's reissue 6,595, which was separated, it is said, from reissue 6,594 on account of this patent of Cogswell and McKiernan. The combinations patented in reissue 6,594 embrace other parts not contained in Cogswell and McKiernan's patent; and the defendants contend that this reissue is void, as not being sustained by the original patent 37,321.

The latter position, we think, is untenable. Cochrane's

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apparatus, as exhibited in his model, and described in his original patent, and in the series of patents taken out at the same time, all having relation to the same general process and referred to in patent 37,321, contained all the parts which go to make the combination claimed in reissue No. 6,594. We see no reason, therefore, why such reissue was not properly granted to him by the Patent Office;—the claim being, in fact, a much narrower one than that of the original patent.

The same observations apply to reissue No. 6,595. But, as to that, as before stated, the particular elements of the combination claimed in it are found in Cogswell and McKiernan's machine; and if this is entitled to the precedence over Cochrane's reissue No. 6,595 is void. He contends that it is not entitled to such precedence, but that, in fact, Cogswell and McKiernan surreptitiously obtained a patent for his invention. We have examined the evidence relating to this matter, and are satisfied that the improvement claimed by Cochrane was his invention; that Cogswell and McKiernan obtained their knowledge of it from him; and that there is nothing connected with their patent which ought to invalidate the reissued patent in question.

A French patent dated 27th of September, 1860, granted to one Perigault, is also referred to as anticipating the combinations in these patents. But it being shown that Cochrane's invention was actually made before that date, the point was not pressed in the argument. By the Act of 1870, a foreign patent, in order to invalidate an American patent, must antedate the invention patented.

Our conclusion is, that the patent for the process, being reissue No. 5,841, and the several reissued patents for combinations of mechanical devices, numbered respectively 6,030, 6,594 and 6,595, are valid patents, and are infringed by the defendants; and that the other two patents named in the bill of complaint, numbered respectively 37,819 and 37,320, are not infringed by the defendants.

Notes and Citations.

The decree of the court below is, therefore, reversed and the cause is remanded, with directions to enter a decree for the complainants, and to proceed therein in conformity with this opinion.

Mr. Justice CLIFFORD (*d*), dissenting:

I dissent from the opinion and judgment of the court in this case, for the following reasons:

1. Because the mechanical means employed by the respondents to effect the result are substantially different from those described in the complainants' patent.

2. Because the process employed by the respondents to manufacture the described product is materially and substantially different from the patented process employed by the complainants.

3. Because the respondents do not infringe the combination of mechanism patented and employed by the complainants. *Prouty v. Ruggles*, 16 Pet. 341 [4 Am. & Eng. 351]; *Vance v. Campbell*, 1 Black, 428 [7 Am. & Eng. 117]; *Gill v. Wells*, 22 Wall. 26 [9 Am. & Eng. 471].

4. Because the respondents do not infringe the process patented by the complainants, the rule being, that a process, like a combination, is an entirety, and that the charge of infringement in such a case is not made out unless it is alleged and proved that the entire process is employed by the respondents. *Howe v. Abbott*, 2 Story, C. C. 194; *Gould v. Rees*, 15 Wall. 193 [9 Am. & Eng. 39].

I concur in this dissent.—STRONG, J.

94 U. S. 791-792.

Notes:

7. See *Blake v. Robertson*, 94 U. S. 728, note [p. 266 *ante*].

(*d*) Otto inserts "with whom concurred Mr. Justice STRONG."

Notes and Citations.

8. A process is patentable irrespective of the instrumentalities:
New Process Fermentation Co. *v.* Maus, 122 U. S. 413.
Telephone Cases, 126 U. S. 1.
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†11. Process claims:

Mechanical:

- LeRoy *v.* Tatham, 14 How. 156 [5 Am. & Eng. 313].
LeRoy *v.* Tatham, 22 How. 132 [7 Am. & Eng. 29].
Silsby *v.* Foote, 14 How. 219 [5 Am. & Eng. 411].
Silsby *v.* Foote, 20 How. 290 [6 Am. & Eng. 388].

Telegraphical:

- O'Reilly *v.* Morse, 15 How. 62 [5 Am. & Eng. 483].

Mechanical:

- Corning *v.* Burden, 15 How. 252 [6 Am. & Eng. 69].
Burr *v.* Duryee, 1 Wall. 535 [7 Am. & Eng. 224].
Case *v.* Brown, 2 Wall. 320 [7 Am. & Eng. 360].

Chemical:

- Rubber Co. *v.* Goodyear, 9 Wall. 788 [8 Am. & Eng. 150].

Mechanical:

- Railroad Co. *v.* Dubois, 12 Wall. 47 [8 Am. & Eng. 433].
Mowry *v.* Whitney, 14 Wall. 434 [8 Am. & Eng. 506].
Mitchell *v.* Tilghman, 19 Wall. 287 [9 Am. & Eng. 174].
Russell *v.* Klein, 19 Wall. 433 [9 Am. & Eng. 244].
Wood Paper Patent, 23 Wall. 566 [10 Am. & Eng. 199].
Brown *v.* Piper, 91 U. S. 37 [10 Am. & Eng. 272].
Sewall *v.* Jones, 91 U. S. 171 [10 Am. & Eng. 336].
Russell *v.* Dodge, 93 U. S. 460 [10 Am. & Eng. 495].

Chemical:

- Smith *v.* Goodyear D. V. Co., 93 U. S. 486 [11 Am. & Eng. 1].
Merrill *v.* Yeomans, 94 U. S. 563 [p. 203 *ante*].

Mechanical:

- Cochrane *v.* Deener, 94 U. S. 780 [p. 288 *ante*].

Chemical:

- Powder Co. *v.* Powder Works, 99 U. S. 126.
Goodyear D. V. Co. *v.* Davis, 102 U. S. 222.

†Note by William D. Baldwin, Esq.

Notes and Citations.

Mechanical:

- Tilghman v. Proctor, 102 U. S. 707.
Worley v. Tobacco Co., 104 U. S. 341.
Vinton v. Hamilton, 104 U. S. 483.
Packing Co. Cases, 106 U. S. 556.
Wing v. Anthony, 106 U. S. 142.
Downton v. Yeager, 108 U. S. 466.
King v. Gallun, 109 U. S. 99.
Cochrane v. Badische Co., 111 U. S. 293.
Western Electric Mnfg. Co. v. Ansonia Brass Co., 114 U. S. 447.
Eachus v. Broomall, 115 U. S. 529.
Miller v. Foree, 116 U. S. 22.
White v. Dunbar, 119 U. S. 47.
Plummer v. Sargent, 120 U. S. 442.
Eames v. Andrews, 122 U. S. 40.
Lawther v. Hamilton, 124 U. S. 1.
Dreyfus v. Searle, 124 U. S. 60.

Telegraphical:

- Telephone Cases, 126 U. S. 1.

Mechanical:

- Mosler Co. v. Mosler, 127 U. S. 354.

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15. Infringement of a combination by substitution of a known equivalent. See
Blake v. Robertson, note 1 [p. 266 *ante*].
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17. Foreign patent must antedate the invention in order to defeat it:
City of Elizabeth v. Pavement Co., 97 U. S. 781.
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Notes and Citations.

Patents in suit:

- No. 37,317. Cochrane, Wm. F. Jan. 6, 1863. Reissue No. 5,841, April 21, 1874. Bolting Flour *a*.
No. 37,318. Cochrane, Wm. F. Jan. 6, 1863. Reissue No. 6,030, Aug. 25, 1874. Bolting Flour *b*.
No. 37,319. Cochrane, Wm. F. Jan. 6, 1863. Bolting Flour *c*.
No. 37,320. Cochrane, Wm. F. Jan. 6, 1863. Bolting Flour *d*.
No. 37,321. Cochrane, Wm. F. Jan. 6, 1863. Bolting Flour. Reissues Nos. 6,594 and 6,595. Aug. 17, 1875. Bolting Flour *e*.
-

OTHER SUITS ON SAME PATENTS:

- American Middlings, &c. Co., *v.* Christian, 1877. 4 Dill. 448; 3 Ban. & Ard. 42, *a, b, c*.
Cochrane *v.* Deener, 1877. 95 U. S. 355, *a, b, c, d, e*.
American Middlings, &c. Co., *v.* Atlantic Milling Co., 1877. 4 Dill. 100; 3 Ban. & Ard. 168, *a, b, c*.
American Middlings, &c. Co. *v.* Vail, 1878. 15 Blatch. 315; 4 Ban. & Ard. 1, *a, b*.
American Middlings, &c. Co., *v.* Atlantic Milling Co., 1879. 5 Dill. 127; 4 Ban. & Ard. 148; 15 O. G. 467.
-

Cited:**IN SUPREME COURT IN:**

- Fermentation Co. *v.* Maus, 1887. 122 U. S. 413; Bk. 30 L. ed. 1192.
Telephone Cases, 126 U. S. 1.
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* The letter *a, b, c* following the patent is repeated after the title of the case to indicate that the suit was on that particular patent.

Notes and Citations.

IN CIRCUIT COURTS IN :

American Middlings Purifier Co. v. Atlantic Milling Co., December, 1877. 4 Dill. 100; 3 Ban. & Ard. 168.
American Middlings Purifier Co. v. Atlantic Milling Co., March, 1879. 5 Dill. 127; 15 O. G. 467; 4 Ban. & Ard. 148.
Page v. Holmes Burglar Alarm Telegraph Co., May, 1880. 18 Blatch. 118; 2 Fed. Rep. 330; 5 Ban. & Ard. 439.
Smith v. Merriam, January, 1881. 6 Fed. Rep. 713; 19 O. G. 601; 11 Reporter, 729.
MacKay v. Jackman, April, 1882. 20 Blatch. 466; 12 Fed. Rep. 615; 22 O. G. 85.
Boyd v. Cherry, January, 1883. 4 McC. 70.
New Process Fermentation Co. v. Koch, May, 1884. 21 Fed. Rep. 580.
New Process Fermentation Co. v. Maus, June, 1884. 20 Fed. Rep. 725.
Eastern Paper Bag Co. v. Standard Paper Bag Co., February, 1887. 30 Fed. Rep. 63; 41 O. G. 231.
Filley v. Littlefield Stove Co., April, 1887. 30 Fed. Rep. 434.
Phillips v. Kochert, May, 1887. 31 Fed. Rep. 39.
Celluloid Mnfg. Co. v. American Zylonite Co., September, 1887. 42 O. G. 961.

IN DECISIONS OF COMMISSIONER OF PATENTS IN:

Huttner & Scott, June, 1878. 14 O. G. 118.
Ex parte Hicks, July, 1879. 16 O. G. 546.
Ex parte Herr, October, 1887. 41 O. G. 463.

Notes and Citations.

IN TEXT BOOKS:

2 Abb. Pat. Law. 1886, pp. 45, 277, 386.

Merwin on Pat. Invt., 1883, p. 76.

Walker on Pats., 1883, pp. 46, 244, 251, 255, 275, 415, 449.

Syllabus.

WILLIAM ROEMER, APPELLANT v. EDWARD
SIMON ET AL.*

95 (5 Otto) U. S. 214-221. Oct. Term, 1877.

[Bk. 24, L. ed. 384 ; 12 O. G. 796.]

Affirming *Ibid*, 1 Ban. & Ard. 138.

Argued October 23, 1877. Decided November 5, 1877.

Evidence. Patent. Burden of proof. Statutory notice. Special defences. Agreement. Estoppel. Prior foreign use. Amendment to answer.

1. Where the patent described in the bill of complaint is introduced in evidence, the patentees or assignees are presumed to be the original and first inventors of the described improvement. (p. 354.)
2. Having proved the alleged infringement, the burden of proof is cast upon the respondents to show that the patent is invalid, unless the patent is materially defective in form. (p. 354.)
3. Parties defendants sued at law for infringement are not allowed to set up the defence of a prior invention, knowledge, or use of the thing patented, unless written notice thereof is given thirty days before the trial. Such notice must state the names of the patentees and the dates of their patents alleged to have been invented, and the names and residences of the persons alleged to have invented or to have had the prior knowledge of the thing patented, and where and by whom it had been used. (p. 354.)
4. Since the passage of the act of July 8, 1870, the regulation in equity suits is, that defences such as are described in section 61 of that act, may be pleaded in any equity suit for relief against an alleged infringement, and that proof of the same may be given upon like notice in the answer of the respondent, and with like effect. (p. 354.)
5. On appeal, questions not involved in the assignment of errors will be passed over without examination. (p. 355.)
6. An agreement with a complainant not to manufacture the device

* See Explanation of Notes, page III.

Syllabus.

of a certain firm, does not work an estoppel, it being a controverted fact as to the identity of such device with the patented device alleged to be infringed. (p. 355.)

7. Proof of prior use in a foreign country will not supersede a patent granted here, unless the alleged invention was patented in some foreign country ; but proof of such foreign manufacture and use, if known to the applicant for a patent, may be evidence tending to show that he is not the inventor of the alleged new improvement. (p. 357.)
8. The respondents having given due notice of the defence of prior invention and use, stating the names and residences of the persons having the prior knowledge, and where and by whom the alleged invention has been used, added further that it had been known to and used by others to them unknown, and prayed leave that when discovered they might be permitted to insert and set forth their names in the answer : *held*, that on motion to insert, in accordance with the notice, and no objection made, the court was justified in entering the additional names and residences *nunc pro tunc*. (p. 360.)
9. Prior knowledge and use of the device patented to Wm. Roemer in letters patent No. 56,801, July 31, 1866, Traveling Bags, *held* sufficiently established by the testimony of three witnesses. (p. 360.)

[Citations in the opinion of the court:]

- Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290]. p. 354.
Blanchard v. Putnam, 8 Wall. 420 [8 Am. & Eng. 107]. pp. 354, 359
Curt. Pat. (4th ed.) sec. 217. p. 356.
Collar Co. v. Van Deusen, 23 Wall. 530 [10 Am. & Eng. 156]. p. 357.
Dunbar v. Meyers, 94 U. S. 196 [11 Am. & Eng. 59]. p. 357.
Teese v. Huntingdon, 23 How. 2 [7 Am. & Eng. 72]. p. 359.
Brown v. Hall, 6 Blatch. 401. p. 360.

Appeal from the Circuit Court of the United States for the District of New Jersey.

This was a suit in equity, brought in the court below by the appellant against the appellees, for the alleged infringement of letters patent granted to Roemer for an improvement in traveling bags.

The case is stated by the court.

Argument of counsel.

Messrs. Arthur v. Briesen, Jonathan Marshall and A. G. Riddle, for appellants :

A patent granted to an inventor, and put in evidence, is *prima facie* evidence that the patentee was the original and first inventor of the matter set forth in his patent.

Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290].

This presumption is still further strengthened by an adjudication in favor of the patent in a court of competent jurisdiction "the former judgment and decree although against other parties raises a strong presumption that the patent is valid."

American Nicholson Pavement Co. v. The City of Elizabeth, 4 Fish. 191.

The favorable presumption thus established is still further increased by the fact of the existence of the agreement, Exhibit No. 7. This agreement was drawn to shield the defendants from the effect of a suit brought against them in 1869 for infringement of the same patent the very same infringing devices which are complained of in this suit were, as has already been shown, used by the defendants at and before the date of said agreement. The very fact of the withdrawal of the first suit, coupled with said agreement, shows an admission of infringement, and of the validity of complainant's patent, which admission, it is humbly submitted, estops the defendants from further drawing the validity of said patent in question. It is clear from the evidence, that the practical construction which the complainant put upon the agreement, Exhibit No. 7, was that it released the defendants from the former suit, in consideration of their promise not to infringe any more on his patent. "The practical construction given by parties to a contract is, in case of doubt, entitled to great weight."

Rubber Co. v. Goodyear, 9 Wall. 799 [8 Am. & Eng. 150]; Railroad Co. v. Trimble, 10 Wall. 377 [8 Am. & Eng. 261].

"Every reasonable doubt should be resolved against the defendant," who alleges prior use. "The law requires not conjecture, but certainty."

Argument of counsel.

Coffin v. Ogden, 13 Wall. 124 [9 Am. & Eng. 125].

"It is not enough that the defendants raise a doubt on the point of prior knowledge and use. They must satisfy the Court on that point."

Magic Ruffle Co. v. Douglass, 2 Fish. 330. See, also, *Parham v. American Button-hole Co.*, 4 Fish. 468.

"To doubt upon the question of prior use is to resolve it in the negative. If the persons interested in the prior machines laid them aside for years, and thus indicated a judgment against their practical utility, the court but enforces a logical sequence in assigning them to the category of unsuccessful and abandoned experiments."

Seymour v. Marks, 6 Fish. 115; *Gear v. Grosvenor*, 6 Fish. 314.

As already stated, no notice of the intention to take the depositions of the witnesses, Sayers and Doxsey, had been given in the answer of the defendants. Objection to the reading of their depositions was made at the hearing by complainant's counsel, as appears from the opinion of the Court below. Nevertheless, the Court below considered said testimony, and allowed it to affect the complainant's cause. It is here submitted that this was a serious error on the part of the Court below. The law strictly provides (Sec. 61, Act July 8, 1870,) that in equity cases the defendants must give the names and residences of the persons through whom they intend to prove prior knowledge, and also the places at which, and by whom the same is said to have been used. Is the statute to stand for naught? The Courts have always held that such notice is necessary. The Supreme Court has so held in the case of *O'Reilly v. Morse*, 15 How. 110 [5 Am. & Eng. 483]; *Agawam Co. v. Jordan*, 7 Wall. 583 [8 Am. & Eng. 24]; *Seymour v. Osborne*, 11 Wall. 516 [8 Am. & Eng. 290]; *Rubber Co. v. Goodyear*, 9 Wall. 788 [8 Am. & Eng. 150]; *Blanchard v. Putnam*, 8 Wall. 420 [8 Am. & Eng. 107].

The Court below took the ground that the failure of counsel for complainant to object to the testimony of Sayres and

Argument of counsel.

Doxsey before the examiner, was a waiver of the objection to notice. Counsel for appellant has failed to find any decision of the Supreme Court on this point. All the decisions of the highest Court simply state that proofs not noticed in the answer cannot prevail at the hearing. It is clear that if complainant's counsel had failed to object at the hearing he would have waived his objection. But the objection before the Court is the only proper objection to take. How could the failure to object before the examiner injure the defendants, who well knew, at that time, that their proofs were not in harmony with their pleadings? No principle is better settled, than that a party is not estopped by his silence, unless it led another to his hurt.

Hill v. Epley, 7 Casey, 334.

It has been held, that the object of the statute, in requiring the notice referred to, is to guard the plaintiff against surprise. If he be so surprised, is it not proper that he should raise his objection before the court that is to determine as to the sufficiency of the proofs? Is the objection not timely if raised as soon as the objectionable evidence is sought to be read in court? Do the pleadings and proofs of the defence agree, as they should, if the proofs contain matter not mentioned in the pleadings? Can, in fact, any court assume the responsibility of disregarding the dictates of the statute, which has been established for the protection of inventors, and admit, to their injury, matter in evidence, which the law distinctly states, should not be admitted in evidence?

The proper course of the defendants in such cases is to move for an amendment of their answer *immediately upon the discovery of important evidence* of prior knowledge or use, and to connect that motion with proof, showing that such new testimony was not *within reach of the defendants at a prior stage of the proceedings*. This has been neglected by these defendants. They did not move for a timely amendment of their answer. They produced proofs, which under the law, they had no right to produce, and the court

Argument of counsel.

considered these proofs, which under the law, it had no right to consider. The complainant in not specially rebutting the evidence of Sayers and Doxsey, relied upon his right under the statute. *Agawam Co. v. Jordan*, 7 Wall. 583 [8 Am. & Eng. 24].

Mr. Frederic H. Betts, for appellees :

The evidence of want of novelty in the claim of patentee is conclusive and uncontradicted. Evidence that catches like complainant's patent were known, used and sold abroad and especially in England. On this point of the case Judge Nixon decided, after making a careful analysis of the testimony, as follows : " There was no contradiction of these witnesses, and their evidence seems to establish the defendant's proposition that there was a foreign prior use of the improvement described and claimed in the complainant's patent."

The argument against the evidence of the witnesses Sayers and Doxsey is based on the ground that no notice was given of their examination. We suppose that this means that their names were not mentioned in the original answer ; but the answer was amended *without objections* by the decretal order *nunc pro tunc*, as of the day of filing the same. This cured any defect of that kind, and, as plainly held by the decision of the court, the omission to object to the witnesses at the time of their examination waived the defect. If the objection had been made when the witnesses were called, the defendant would have immediately applied for an amendment of the answer, but as no objection was made, the witnesses were examined and the answer afterwards amended *nunc pro tunc*. It would be most unjust to a defendant to allow him to go to the expense of examining witnesses on a point without any objection whatever, and then when the testimony was all taken, relying upon the silence of the opposite party, and when it was too late to retake the testimony, to allow an objection then raised to a formal matter of that kind to be enforced.

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This court has affirmed the propriety of the liberal rule of allowing amendments, especially in a case like this, where there is no objection and no injury to the complainant.

Teese v. Huntingdon, 23 How. 2 [7 Am. & Eng. 72].

Mr. Justice CLIFFORD delivered the opinion of the court:

Patentees or assignees in a suit for infringement, where the patent described in the bill of complaint is introduced in evidence, are presumed to be the original and first inventors of the described improvement; and, if they have proved the alleged infringement, the burden of proof is cast upon the respondents to show that the patent is invalid, unless the patent is materially defective in form.

Parties defendants sued as infringers are not allowed, in an action at law, to set up the defence of a prior invention, knowledge, or use of the thing patented, unless they have given notice of such defence in writing thirty days before the trial, and have stated in that notice "The names of the patentees and the dates of their patents alleged to have been invented, and the names and residences of the persons alleged to have invented or to have had the prior knowledge of the thing patented, and where and by whom it had been used." 16 Stat. at L. 208; R. S. sec. 4920; *Seymour v. Osborne*, 11 Wall. 516 [8 Am. & Eng. 290]; *Blanchard v. Putnam*, 8 Wall. 420 [8 Am. & Eng. 107].

Since the passage of the act of the 8th of July, 1870, the regulation in equity suits is that defences such as are described in section 61 of that Act "May be pleaded in any equity suit for relief against an alleged infringement, and that proof of the same may be given upon like notice in the answer of the respondent, and with like effect." 16 Stat. at L. 208.

Service was made; and the respondents appeared and filed an answer, in which they deny that they have ever in any way infringed the letters patent described in the bill of complaint; and they also set up several other defences, as

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follows: (1) That the specification filed in the Patent Office contains less than the whole truth relative to the invention, or more than is necessary to produce the described effect. (2) That the patent was surreptitiously and unjustly obtained for that which was in fact invented by another. (3) That the alleged invention had been patented prior to the supposed invention by the complainant. (4) That the alleged invention had been described in a certain publication prior to the alleged invention by the patentee. (5) That the complainant was not the original and first inventor of the supposed improvement; that the same had been previously invented and known and used by the persons named in the answer, and by many other persons whose names are unknown to the respondents, which, when discovered, the respondents pray leave to insert and set forth in the answer.

Proofs were taken on both sides; and the parties went to hearing upon bill, answer, replication, and that proofs exhibited in the record. Both parties were fully heard; and the court entered a decree in favor of the respondents, dismissing the bill of complaint; and the complainant appealed to this court.

Three errors are assigned, in substance and effect as follows: (1) That the court did not give due effect to the agreement between the parties which was introduced in evidence by the complainant. (2) That the evidence introduced by the respondents, to prove use and knowledge of the thing patented prior to the patent granted to the complainant, was insufficient to establish that defence. (3) That the court erred in admitting evidence to prove such prior use and knowledge, of which no notice had been given in the answer.

Questions not involved in the assignment of errors will be passed over without examination.

1. By the articles of agreement, the respondents agree that "They will not manufacture or use the clasp or catch manufactured by a certain firm therein mentioned without the

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consent of the complainant, his executors, administrators, or assigns." They did not agree not to manufacture or use the thing patented in the complainant's patent. Instead of that, the charge in the bill of complaint is that the respondents have manufactured and sold to others large quantities of traveling bags in violation of the complainant's rights and privileges under his letters patent. Attempt is made to show that the clasp or catch manufactured by the firm, referred to in the agreement, is the same as that of the complainant; but that is a question of fact open to controversy, which is sufficient to show that the agreement does not work an estoppel, as supposed by the respondents. *Curt. on Pat.*, 4th ed., sec. 217.

Much reference to the specification is unnecessary, as the defence, that the respondents have not infringed the supposed invention, is not pressed in the argument for the appellee. My invention, says the patentee, consists in the application of two staples or clamps, one at or near each end, to the frame of a traveling bag in such a manner that when the bag is packed full the staples or clamps shall fasten the ends or corners together. In the same connection he also describes a mode of fastening the staples or clamps to the frame of the bag by a strap which passes over the center of each staple; and he adds, that the staple or clamp "is made of strong iron turned down at each end." Sufficient description is given of the staple or clamp; but the strap is not described, except by being exhibited in the drawings.

Clamps, the patentee admits, have before been applied to small and fancy bags instead of a lock at or near the center of the frame, and therefore he does not claim the application of clamps or staples broadly; but, says the patentee, what I claim as my invention and desire to secure by letters patent is a frame for traveling bags having staples and straps, meaning the described staple and strap adjusted at

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the top thereof, relieving the lock from strain, as combined, arranged, and described.

Suffice it to say, that it is obvious from an inspection of the specification that the real invention, if any, is in the staples or clamps, and perhaps in the arrangement of two of them at the top of the frame. Doubtless one method of arrangement may be better than another; but the particular method of attachment to the frame cannot be very material, as any mechanic, if furnished with the clamps, could affix the device in various equivalent ways.

Five witnesses admitted to be creditable were examined by the respondents, whose testimony clearly shows that the thing patented had been previously known and used very extensively in this country by the persons named in the answer and by many others.

Exclusive rights of the kind are granted only to inventors or discoverers of some new and useful art, machine, manufacture, or composition of matter, or some new and useful improvement thereof; and the law is well settled that nothing short of invention or discovery will support a patent for any such alleged new and useful improvement. Certain other important conditions are also annexed to the exercise of the right to obtain such a muniment of title for such an invention or discovery; as, for example: the improvement must not only be new and useful, but it must be one not known or used by others in this country and not patented or described before the invention or discovery in any printed publication in this or any foreign country, and must not have been in public use or on sale more than two years prior to the application for a patent. 16 Stat. at L. 201; R. S. sec. 4886; *Collar Co. v. Van Deusen*, 23 Wall. 531 [10 Am. & Eng. 156]; *Dunbar v. Meyers*, 94 U. S. 196 [p. 59 *ante*].

Antecedent patents here or elsewhere are not set up in the answer; and it is clear that proof of prior use in a foreign country will not supersede a patent granted here, unless the alleged invention was patented in some foreign country.

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Proof of such foreign manufacture and use, if known to the applicant for a patent, may be evidence tending to show that he is not the inventor of the alleged new improvement ; but it is not sufficient to supersede the patent if he did not borrow his supposed invention from that source, unless the foreign inventor obtained a patent for his improvement. or the same was described in some printed publication.

Doubt upon that subject cannot be entertained ; but it is equally clear, that if the alleged improvement had been previously patented here or in a foreign country, or if it had been previously known or used by others in this country, or if it had been in public use or on sale for more than two years prior to his application for a patent, the letters patent cannot be sustained. 16 Stat. at L. 201.

Competent proof of a prior patent anywhere is entirely wanting, nor is there any satisfactory evidence that the invention was previously described in any printed publication; but the evidence shows, beyond any reasonable doubt, that the thing patented was known and used extensively by others in this country before the invention or discovery made by the patentee, as set forth and described in the bill of complaint. Such was the finding of the court below ; and the evidence is so full to the point, and is so fully set forth in the record and in the opinion delivered in the Circuit Court, that it is not necessary to reproduce it in the present opinion.

Suppose that is so ; still it is insisted by the complainant that the testimony of two of the witnesses should have been excluded, because their names and residences were not set forth in the answer as persons alleged to have had a prior knowledge of the thing patented.

Written notice of the names of the witnesses intended to be called by the defendant or respondent to prove such a defence is not required by the Act of Congress. Instead of that, the requirement is that the defendant party shall state the names of the patentees, and the dates of their patents,

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and when granted, and "The names and residences of the persons alleged to have invented or to have had the prior knowledge of the thing patented, and where and by whom it had been used." 16 Stat. at L., 208.

Notice of the kind is required, in order to guard the moving party from being surprised at the trial by a defence of a nature which he could not be presumed to know or be prepared to meet; and, to prevent such consequences, the defendant or respondent is required to state "The names and residences of the persons alleged to have previously invented the improvement, or to have the prior knowledge of the thing patented, and where and by whom it had been used." *Teese v. Huntingdon*, 23 How. 2 [7 Am. & Eng. 72].

Prior use and knowledge of the thing patented may be pleaded as a defence to a suit for infringement; but the respondent cannot be allowed to give evidence to support such defence, if seasonable objection be made, unless it appears that he gave notice in his answer of the names and residences of the persons alleged to have had such prior knowledge of the thing patented. *Blanchard v. Putnam*, 8 Wall. 420 [8 Am. & Eng. 107].

Seasonable objection was made in that case by the plaintiff, the suit being an action at law, and the court held that the evidence was not admissible without an antecedent compliance with the conditions of the Patent Act; but the case before the court is clearly distinguished from that in several particulars. Due notice was given in the answer that the invention and every material and substantial part thereof had been previously invented and used by and was known to certain persons therein named, twelve in all; and the respondents in due form stated the names and residences of the persons alleged to have had such prior knowledge, and where and by whom the invention had been used. Superadded to that, they also alleged that the supposed invention had previously been known to and used by many other persons, to the respondents unknown; and they prayed

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leave, as before remarked, that, when discovered, they might be permitted to insert and set forth their names in the answer. Pursuant to that reservation, two witnesses were examined upon that subject by the respondents, without objection; nor does the record, irrespective of the opinion of the court, show that any objection to the admissibility of the evidence was ever made.

Previous notice of the examination of those two witnesses, it seems, was not given; but the presiding justice states that, if seasonable objection had been made, the evidence would have been excluded. None such was made; and it is well settled law that the failure to interpose any such objection before the final hearing is a waiver of the required notice in an equity suit. *Brown v. Hall*, 6 Blatchf. 405.

Explicit notice was given in the answer, that such a defence would be made, and that leave to amend the answer would be asked in case the names and residences of other persons having like knowledge in that regard should be discovered; and, when such a discovery was made, the respondents in due form applied to the court for leave to insert their names and residences in the answer. Viewed in the light of these circumstances, we are all of the opinion that it was clearly competent to allow the proposed amendment. *Teese v. Huntingdon*, [*supra*].

Authority to grant the amendment being established, it follows that the court might properly allow it to be entered *nunc pro tunc*, as originally prayed in the answer. Due notice was there given that such defence would be made, and that the respondents would move to insert the names and residences of other persons when discovered. Such notice prevented surprise, and fully justified the court in allowing the amendment and making the order in the form exhibited in the record.

Suppose the rule were otherwise; still a new hearing would not benefit the complainant, as the testimony of the

Notes and Citations.

other three witnesses is abundantly sufficient to establish the defence of prior knowledge and use.

Decree affirmed.

95 U. S. 221.

Notes:

4. Act 1790, § 6 ; Act 1793, § 6 ; Act 1836, § 15 ; Act 1870, § 61;
R. S. § 4921.
-
-

7. Prior foreign use, effect on patent:

Shaw v. Cooper, 7 Pet. 292 [4 Am. & Eng. 286].

O'Reilly v. Morse, 15 How. 62 [5 Am. & Eng. 483].

8. Waiver of objection to want of notice of names of witnesses :

Phillips v. Page, 24 How. 168 [7 Am. & Eng. 97].

Planing Machine Co. v. Keith, 101 U. S. 479.

Loom Co. v. Higgins, 105 U. S. 580.

Patent in suit:

No. 56,801. Roemer, Wm. July 31, 1866. Traveling Bag.

OTHER SUITS ON SAME PATENT:

Roemer v. Simon, 1874. 1 Ban. & Ard. 138.

Notes and Citations.

Cited:

IN SUPREME COURT IN :

Woodbury Planing Machine Co. v. Keith, 1880. 101 U. S. 479 ;
Bk. 25 L. ed. 939.
Webster Loom Co. v. Higgins, 1882. 105 U. S. 580 ; Bk. 26 L.
ed. 1177.

IN CIRCUIT COURTS IN :

Henry v. Providence Tool Co., October, 1878. 3 Ban. & Ard. 501 ;
14 O. G. 855.
Woodbury Patent Planing Machine Co. v. Keith, January, 1879.
4 Ban. & Ard. 100.
Searls v. Bouton, March, 1882. 12 Fed. Rep. 140 ; 13 Reporter
456 ; 21 O. G. 1784.
Allis v. Buckstaff, October, 1882. 13 Fed. Rep. 879 ; 22 O. G. 1705.

IN TEXT BOOKS:

2 Abb. Pat. Law. 1886, p. 448.
Walker on Pats. 1883, pp. 417, 418.

Oct., 1877.]

ROEMER v. SIMON.

868

Syllabus.

THE KEYSTONE BRIDGE COMPANY, APPELLANT,
v. THE PHOENIX IRON COMPANY.*

95 (5 Otto) U. S. 274-279. Oct. Term. 1877.

[Bk. 24, L. ed. 344 ; 12 O. G. 980].

Affirming *Ibid*, 5 Fish. 468.

Argued October 9, 10, 1877. Decided October 22, 1877.

Particular patents construed. Infringement. Form. Construction of patents. Specification. Reissue in order to cover entire invention. Patentee is bound by his claim. Failure to claim an abandonment.

1. Claim 1 of letters patent No. 34,183, Linville & Piper, January 14, 1862, Iron Truss for Bridges for "the construction of the lower chords of truss bridges of series of *wide and thin* drilled eye-bars C, C, applied *on edge* between ribs S, S, on the bottoms of the posts," etc., *construed* and *held* that the form of the chords is made material and the claim is not infringed by defendant's chords of cylindrical form. (p. 386.)
2. Claim 3 of letters patent No. 50,723, Linville & Piper, October 31, 1865, Wrought Iron Bridge for "the use for the lower chords of truss frames of *wide and thin* rolled bars with enlarged ends, formed by upsetting the iron, when heated, by compression into molds of the required shape, for the purpose of increasing the density," &c., *construed* to be a claim for a particular product made by a particular process and applied to a particular use; *held* not infringed by defendant's cylindrical bars. (p. 387.)
3. Where the specification and claim in both of complainant's patents clearly indicated that certain characteristic features were regarded as of the essence of the invention, the court declined to enlarge the scope of the patents beyond what was thus explicitly set forth. (p. 390.)
4. If the patentees have not claimed the whole of their invention and the omission has been the result of inadvertence, they should have sought to correct the error by reissue. (p. 390.)

*See Explanation of Notes, page III.

Statement of the case.

5. It is the duty of the Patent Office to examine; scrutinize, limit, and make the claim which an applicant is required to present under the law conform to what he is entitled to. (p. 390.)
6. The courts have no right to enlarge a patent beyond the scope of its claim as allowed by lawful authority. (p. 390.)
7. When the terms of a claim in a patent are clear and distinct (as they always should be) the patentee in a suit brought for infringement is bound by it. He can claim nothing beyond it. (p. 390.)
8. Upon suits brought patentees cannot show that their invention is broader than the terms of their claim; or if broader they must be held to have surrendered the surplus to the public. (p. 391.)

[Citations in the opinion of the court.]

Merrill v. Yeomans, 94 U. S. 568. [p. 203 *ante*.] p. 390.

Appeal from the Circuit Court of the United States for the Eastern District of Pennsylvania.

The case is stated by the court.

The specifications and drawings of the Linville & Piper letters patent are as follows :

J. H. LINVILLE, OF ALTOONA, PENNSYLVANIA,
ASSIGNOR TO HIMSELF AND J. L. PIPER, OF
ALTOONA, AFORESAID.

Letters Patent No. 34,183, dated January 14th, 1862.

The schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, J. H. Linville, of Altoona, in the county of Blair, and State of Pennsylvania, have invented a new and useful Improvement in Iron Truss Bridges; and I do hereby declare that the following is a full, clear and

Statement of the case.

exact description of the same, reference being had to the accompanying drawings forming part of this specification, in which—

Fig. 1 is a side elevation of two panels of a truss bridge constructed according to my invention.

Fig. 2 is a transverse vertical section of the same.

Fig. 3 is a plan of the top chords and lateral braces.

Fig. 4 is a plan of the bottom chords and lateral braces.

Fig. 5 is a horizontal section of one of the posts.

Similar letters of reference indicate corresponding parts in the several figures.

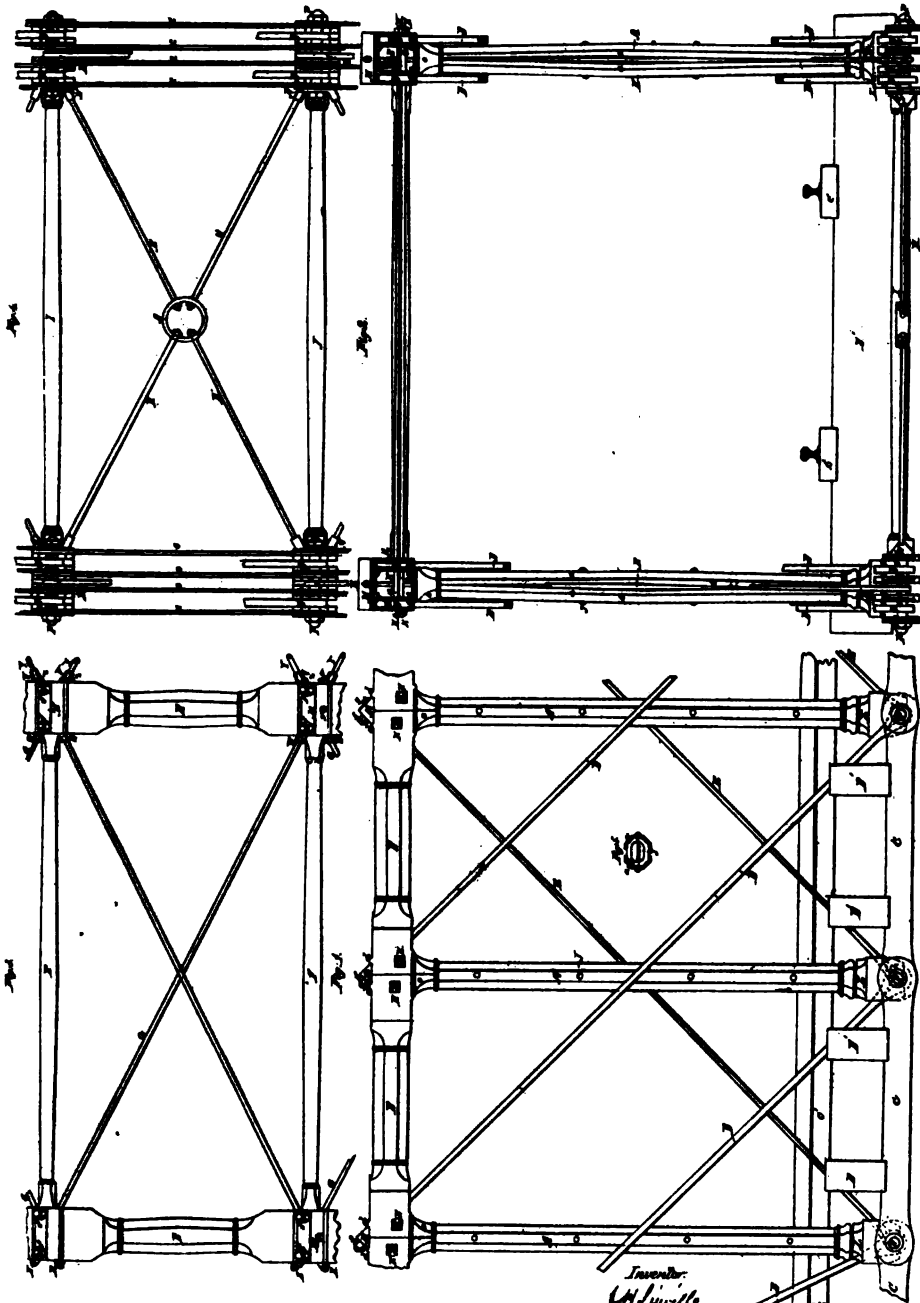
My invention consists, 1st, in a novel construction of the lower chords and mode of applying the same in combination with the posts and other parts of the truss; 2d, in a novel construction of the posts of wrought and cast iron.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

O A L, O A L, are the posts; B B, the sections of the top chords; C C, the sections of the bottom chords; D D, the diagonal tension braces or suspension rods; E E, counter diagonal tension braces; F F, lateral struts between the top chords; G G, lateral diagonal tension braces between said chords; I I, transverse struts between the lower chords and lower ends of the posts; H H, lateral diagonal tension braces between the lower chords and lower ends of the posts; B' B', floor beams; C' C', longitudinal timbers supporting tracks.

The bottom chords C C, are each composed of a series of wide thin eye bars of wrought iron, of a length corresponding with the distances between the posts on one side of the truss, placed on edge to enable them to give vertical support to the roadway, and fitted outside of the bases L L, of the posts and between ribs S S, formed on the said bases, as shown in Figs. 2 and 4. The bars C are extended in width at their ends and drilled to receive connecting pins P P, one at the base of each post, the said pins passing

J.H. Linville,
Iron Truss Bridge,
No. 24,183. Patented Jan. 14, 1862.



Inventor:
J.H. Linville
per Messrs. H. C. H. H. H. H.

Statement of the case.

through the said ribs S S, and being supported by the suspension bars D D, which, as well as the counter diagonals E E, are also fitted between other and similar ribs S S, the lower ends of the said bars being made with eyes for the reception of the said pins. The said chords, the ribs S S, and the diagonal rods D D and E, are so disposed or distributed as to obviate all danger of bending the connecting pins P P, which can only yield by being sheared off by the tensile strain on the chords and diagonals; and the chords being thus well supported at short intervals, support the floor beams and track without the employment of auxiliary beams for this purpose.

The principal portions A A, of the posts, O A L, O A L, each consist of two rolled plates of wrought iron *a a* (see Figs. 2 and 5) of semi-octagonal or semi-polygonal form in their transverse section secured together at intervals by rivets J J, or by bands shrunk around them, binding them firmly to the filling or distance pieces *b*, which are placed between them at suitable distances apart. The said plates *a a*, are close together at top and bottom, but sprung apart at the middle of their length to render them capable of resisting a greater compressive force and to allow the diagonal counter braces E E, to pass through the posts without cutting away any of the material. The posts are completed by casting around the wrought iron portion A, the bases L, and capitals O, of any desired shape. The wrought iron portion A, may also be constructed of two semi-circular T or L-shaped sections, sprung apart, connected together and terminating in cast bases and capitals in a manner similar to the two semi-polygonal pieces, *a a*. The advantage of this construction of the posts, besides that of allowing the counter braces to pass through them without their being weakened by cutting away the metal, is that they are more flexible than cast-iron posts, and less liable to injury by shocks.

The upper chords B, B, are made of cast iron in sections, of a length equal to the distances between the centres of the

Statement of the case.

posts, said sections having the central portions made of octagonal or other polygonal or circular form in their transverse section, and terminating in rectangular form with mid-ribs R, R, (see figure 2) at their ends which abut together over the posts, to resist the vertical crushing strain resulting from the action of the diagonals, and afford a greater abutting surface to resist and distribute the horizontal compression of the top chord. These mid-ribs and the outside plate of the chord pass through guides e, e, on the top plates of the posts and are thus maintained in line and position. The unusual width given to the abutting ends of the sections of the top chords increase the lateral stiffness of the chords and allow the tension rods D, D, in double cancelled trusses to pass outside of the posts and at sufficient distance apart to admit of screws and nuts, on the ends of the said rods for the purpose of adjustment. The several sections of the top chords may be formed of wrought iron with cast iron ends, in the same manner as the posts O A L, O A L. M, M, are angle blocks placed over the joints of the sections of the top chord and between guide pieces d, d, provided thereon to form bearings for the nuts f, f, which are fitted to the screws of the said rods.

The upper lateral struts F, F, of cast iron rest in pockets or bearings in the sides of the top chords. The lateral rods G, G, pass through the chords and are tightened by nuts K, K, turning against angle bosses, Z, Z, on the outsides of the chords. When the bridge consists of three trusses, the bosses, Z, Z, are used on both sides of the chords of the center truss as shown at the right hand side of Figure 3, a jam nut being used at one side of the truss, and a sleeve nut V, on the other side for the two-fold purpose of adjusting the lateral rod Y, of the third truss in such manner that the two systems of lateral bracing may act independently of each other, which is an advantage in the raising of the bridge and also in its subsequent use. Besides this advantage it,—this system of bracing,—obviates the necessity of passing all the rods through the chords.

Statement of the case.

The lower lateral tension braces H, H consist of short rods connected (as shown in Figure 4) midway between the two trusses, with a ring A', and also connected with the plates N, N, through which the connecting pins P, P, of the lower chords pass, the said plates being interposed between the lower chords and the ends of the cast iron struts I, I, and being secured to the lower chords and bosses of the posts by means of the nuts on the outer ends of the said pins P, P. The said rods may be either tapped into the ends of the plates N, N, as represented or attached by eyes. The lateral struts have each a concave opening in the lower parts of their ends to drop over the connecting pin, and they should bear upon the plates N, N. These plates transmit the strain from the rods H, H, to the struts I, I, without straining the ribs S, S, of the bases of the posts.

I do not claim the use of eye bars or links as chains of suspension bridges, or as tension braces of truss bridges.

But what I claim as my invention, and desire to secure by Letters Patent, is:

First. The construction of the lower chords of truss bridges of series of wide and thin, drilled eye bars C, C, applied on the edge between ribs S, S, on the bottoms of the posts and connected by pins P, P, supported in the diagonal tension braces D, D, and E; all substantially as herein described.

Second. The posts O A L, O A L, composed each of two wrought iron plates or bars *a*, *a*, distance pieces *b*, *b*, and rivets J, J, or their equivalents, and cast iron bases L, L, and capitals O, O; the whole combined as herein specified.

J. H. LINVILLE.

Witnesses:

W. B. WILSON,

JOS. M. WILSON.

Statement of the case.

JACOB H. LINVILLE, OF PITTSBURG, AND JOHN L. PIPER, OF ALTOONA, PENNSYLVANIA.

IMPROVEMENT IN WROUGHT-IRON BRIDGES.

Specification forming part of Letters Patent No. 50,723, dated October 31, 1865.

To all whom it may concern :

Be it known that we, Jacob H. Linville, of Pittsburg, in the county of Allegheny and State of Pennsylvania, and John L. Piper, of Altoona, in the county of Blair and State of Pennsylvania, have invented a new and useful improvement in Wrought-Iron Bridges or other Truss-Frames; and we do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming part of this specification, in which—

Fig. 1 is a side elevation of two panels of a wrought-iron truss-bridge with double intersecting diagonal tension bars. Fig. 2 is a transverse section of the same. Fig. 3 is a side elevation of the wrought-iron upper chord. Fig. 4 is a top view of the same. Fig. 5 is a transverse section of the upper chord through the center of the angle-block in the plane of the center of the post. Fig. 6 is a horizontal section through the base of the post and lower chord-bars. Fig. 7 is an end view of the wrought-iron base of the post. Fig. 8 is a side view of the base of the post. Fig. 9 is a cross-section through the center of a post.

The same letters are used in the several figures to indicate similar parts of the bridge.

Our invention consists of certain improvements in the construction of the wrought-iron truss bridge for which letters patent of the United States were granted to us on the 14th of January, 1862.

In the truss bridge shown in the accompanying drawings, the general arrangement of the parts is similar to that shown in our previous patent just referred to, the improvements

Linville & Finner,
Iron Truss Bridges,
No. 50,723. Patented Oct. 31, 1865.

Sheet 1
2 Sheets



Fig. 4

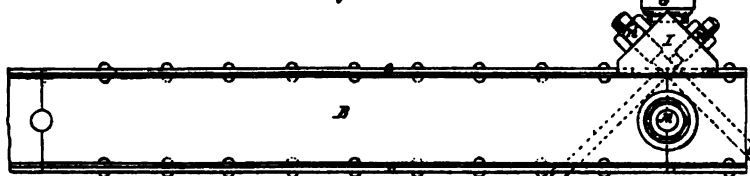


Fig. 5

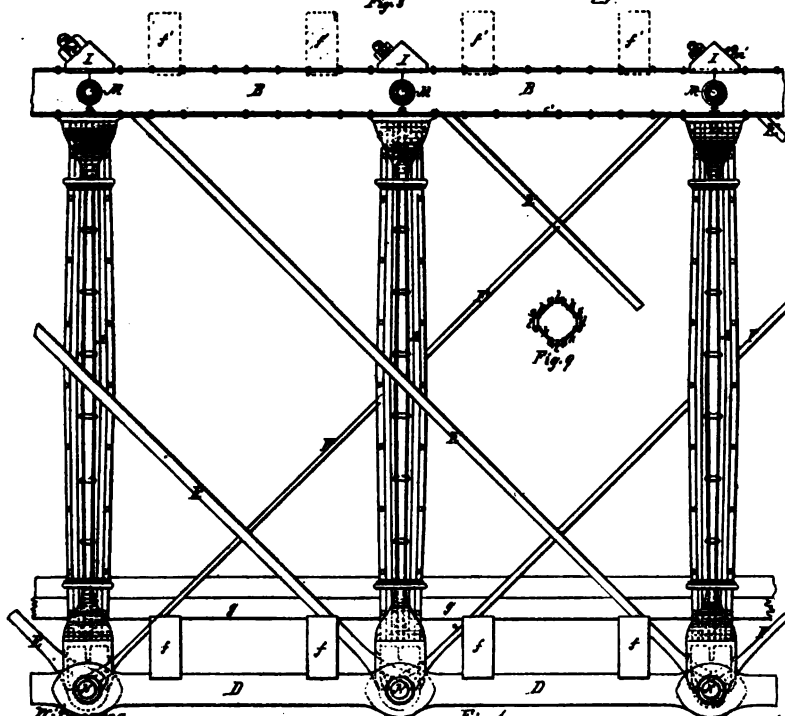


Fig. 1



Fig. 9

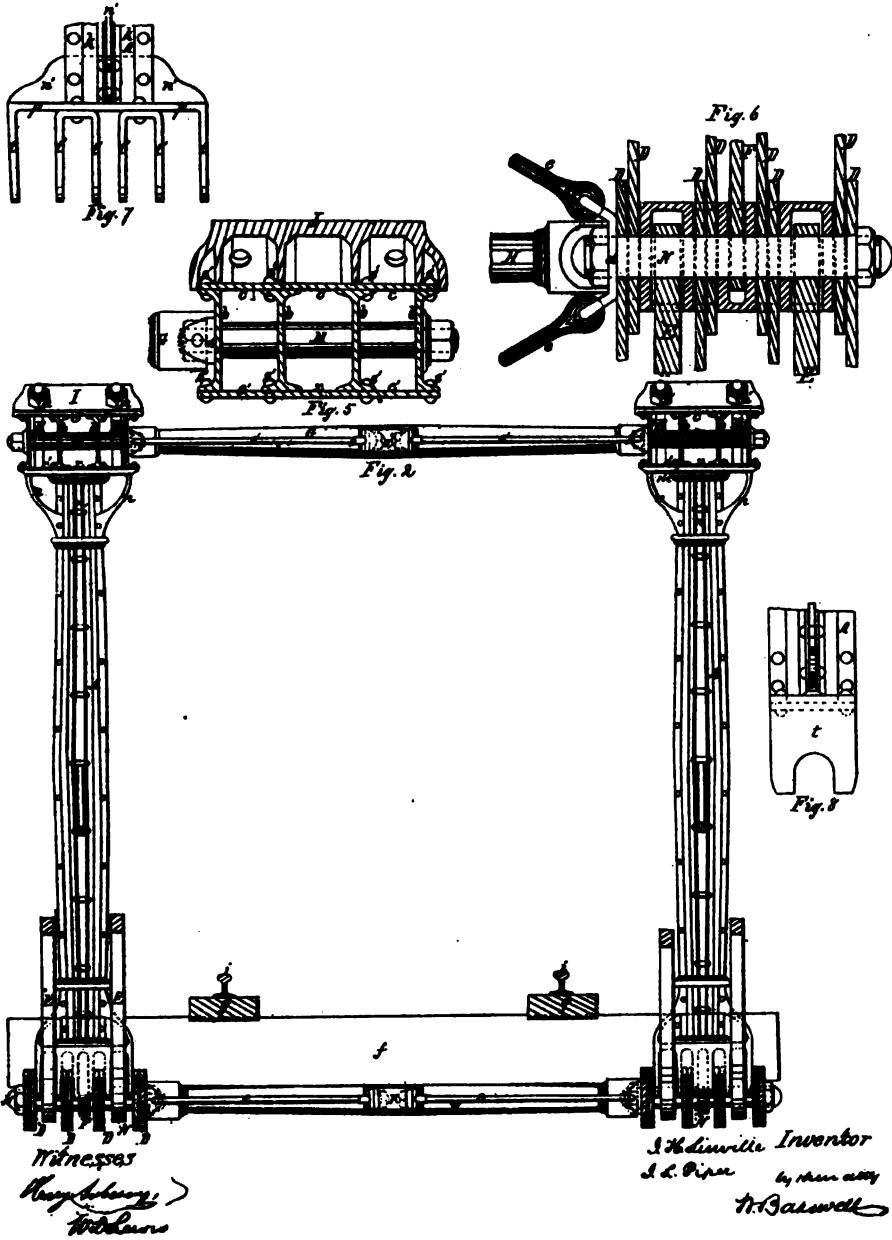
Witnesses
Wm. L. Finner
Wm. L. Finner

Inventor
J. H. Linville
by Charles M. Finner

Linville & Piper.
Iron Truss Bridges.
No. 50,743.

Sheet 2.
2 Sheets

Patented Oct. 31, 1865.



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Statement of the case.

forming the subject-matter of this invention relating to the following particulars: First, the posts, instead of being made of two rolled plates of iron of semi-polygonal transverse section united by rivets passed through the center of the polygon and sprung apart by distance-plates, are made of two or more plates of wrought-iron with flanges at the edge, the plates being so united as to make hollow posts by rivets passed through the flanges, and each plate being arched longitudinally by means of ferrules placed at intervals between the flanges and around the rivets, and instead of casting the bases and capitals onto the ends of the posts we use bases and capitals connected by rivets to the post; second, instead of making the upper chords of hollow cast-iron sections or short tubes, we construct our upper chords of a combination of wrought-iron I-shaped beams or channel-bars, or both, connected by wrought-iron plates, so as to form cellular chords of great strength and capacity of resisting either transverse strain or longitudinal compression; third, the use of bottom chords of thin wrought-iron plates, the eye of which, at each end, instead of being cut out of a rolled plate and drilled or forged into shape, is upset under strong compression, so as to give at the eye of the bar a degree of strength equal or superior to that of the bar at any point between the eyes.

To enable others skilled in the art to construct and use our improvements, we will proceed to describe them more particularly.

In our bridge the upright posts AA are placed at regular intervals at each span, and opposite to each other on each side, so that the transverse struts G may be placed across and at right angles to the roadway, between the upper chords immediately above the capitals of the opposite posts, and transverse struts H similarly placed between the bases of the opposite posts, the ends of the struts G and H being attached to the connecting-pins M and N, which pass through the upper chords immediately above the capitals and through the bases of the posts respectively, as shown in Fig. 2.

Statement of the case.

To a plate, *d*, on the inner end of the connecting-pin *M*, is attached the end of a diagonal brace, *e'*, of which there are four in each panel of the bridge on a level with the upper chords meeting in a ring, *r'*, in the center, to which they are screwed, and four similar braces, *e*, are attached to the connecting-pins *N* at the bottom of the posts *A* in each panel, and meet in a ring, *r*, in the center, to which they are screwed in the same manner. The bases of the posts *A* are connected at their bases longitudinally by the lower chords, *D*, of which four may be placed parallel to each other on each side of each panel. They are made of thin bars of rolled iron of sufficient depth and placed on edge, so as to support the roadway, and are attached to the bases of the post by the connecting-pins *N*, which pass through the hole or eye near the end of these bars.

The top chords, *B*, composed of wrought-iron beams and plates, riveted together, as hereinafter described, are made in sections or lengths reaching from center to center of the posts *A* lengthwise of the bridge, and are placed on the capitals of the posts and are held in position by projections or pins on the capital of the post which enter holes *c* in the lower surface or plate, *c'*, of the chords.

On top of the upper chords, *B*, and just over each post *A*, and covering the joint or meeting-point of the ends of the chords, is an angle-block, *I*, which may be made hollow and of cast-iron, as seen in section in Fig. 5. These angle-blocks for the upper bearing of the nuts *n'*, at the ends of the tension-braces *E* and the counter tension-braces *F*, which support the bridge. Each tension-brace *E* starts from the angle-block *I* at top of one post, passes through the upper chord and downward diagonally, passing outside of the next post, crossing it at midway from its top and bottom, and thence extends to the bottom of the third post, where a loop or eye at the end of the brace *E* receives the connecting-pin *N*, two such braces *E* being used side by side, one passing on each side of the posts *A*. The counter-tension braces *F* (which run diagonally in the opposite direc-

Statement of the case.

tion to the braces E) start from the angle-block I at top of each post A, pass through the upper chord, B, and thence through the center of the next or second post, and thence to the bottom of the third post, where the connecting-pin N passes through the eye or loop at the lower extremity of the counter-brace F.

The roadway is composed of sills *f*, placed transversely on top of the lower chord-bars, D, and the string-pieces *g*, which sustain the rails *i*, are placed longitudinally on the sills, as shown in Fig. 1; or, if a deck-bridge is required, the sills *f* are placed on top of the upper chords, B, as shown by dotted lines in Fig. 1.

Having thus described the general construction and arrangement of our bridge, we will proceed to explain more minutely the peculiar features of the posts, upper chords, and lower chords.

The posts consist of three principal parts, the shaft, the base, and the capital. The shaft is made of pieces of rolled iron *k*, of sufficient length to extend from the top of the capital to the base. In the drawings these posts are represented as made of four such pieces of iron; but the number is not material, as two would suffice if they are bent or curved so as to form a hollow post. The edges of these pieces *k* are turned outward, so as to form a flange on each edge. Instead of uniting these pieces or plates *k* by bringing the flanges together, they are separated by ferrules *l* or small tubes of sufficient diameter to receive the rivets *s*. These ferrules are placed between the opposite flanges of the plates *k*, and then a rivet, *s*, passed through the flanges and ferrule and fastened in the usual manner, by upsetting, unites them firmly. The length of the ferrules *l* determines the distance between the opposite faces of the flanges, this distance being greatest at the center of the post and gradually diminishing toward each end, thus making the post A thickest in the middle.

The capital and base may be made of wrought or cast iron, but we prefer the former, as less liable to fracture. The

Statement of the case.

capital consists of a cap-plate, m , placed on top and riveted to the post, and supported by brackets n , of wrought-iron, placed between the flanges of the plates k composing the post, in place of the ferrules, and also riveted to the flanges of the plate k . The bases are made in the same manner, a base-plate, p , (see Fig. 7), being united to the plates k of the post by brackets n' , passing between the flanges of the plates and riveted thereto. The ends of the base-plate p (which also may be made of wrought-iron) are turned down, forming ribs t (see Fig. 7) and intermediate or mid-ribs, $t' t'$, are added between the ribs $t t$ by riveting to the under side of the base-plate. These ribs t and mid-ribs t' , have semi-circular notches cut in them, as seen in Fig. 8, so as to straddle the connecting-pin N , and they serve to separate and keep in place the diagonal tension-braces E , the counter-braces F , and the eye-bars or lower chords, D , as seen in Figs. 1 and 6.

The cap-plate m of the post may be turned up at the edges, so as to keep in place the top chords; or this may be effected by pins in the cap-plate entering the holes x in the under side of the lower plate c' , of the upper chords.

It is obvious that the shape of the cross-section of the posts may be varied from that shown in Fig. 9 by adding to or reducing the number of plates k , so as to make circular or polygonal post of any number of sides.

The top chords are made by uniting by rivets s' any convenient number of I-shaped beams, b , of rolled iron, to an upper plate, c , and lower plate, c' , both also of rolled-iron. The outside beams may be channel-bars instead of I-beams, as in Fig. 5; or either channel-bars or I-beams may be used, if desired. These top chords are made in lengths equal to the distance between the post A from center to center, and are framed together at the shop before being built into the bridge. The semi-circular holes at the abutting ends of these upper chords formed in the ends of the channel-bars and I-beams admit of the passage of the connecting-pin M , to which the lateral eye-plate d and lateral diagonal braces e'

Statement of the case.

are attached. (See Fig. 2.) The rolled I-beams and channel-bars afford transverse strength to sustain the floor-timbers *ff* (when a deck-bridge is to built) without the use of auxiliary beams, and they also prevent the vertical strain caused by the diagonal tension-braces *E* from crushing the chords over the posts, and by reason of their peculiar cellular construction the sectional area of these combined chords can be graduated in each panel of the bridge in proportion to the compressive strain to be resisted. The width of the top and bottom plates, combined as described, affords great lateral stiffness and the cellular form is most effective in resisting forces of compression.

The lower chords, *D*, consist of wide, thin rolled iron bars, with enlarged ends, which are made by upsetting the rolled bars by compressing them into the desired shape in molds, into which the heated iron is forced under immense pressure, thereby increasing the density, toughness, and strength of the enlarged ends, and permitting the holes or eyes for the connecting-pins, *N*, to be cut out without rendering the transverse section at the eye less than that of other parts of the bar or diminishing the transverse or longitudinal strength of the chord-bar.

We do not claim the upsetting of iron bars in the manner described nor any peculiar mode of performing the operation, but merely the use of chord-bars for bridges, the ties of which are thus formed so as to give additional strength to the bar where it is so much needed.

Having thus described our improvements in wrought-iron truss-bridges, which are applicable also to truss-frames for other purposes, what we claim as our invention, and desire to secure by Letters Patent, is—

1. The use of posts for wrought-iron truss-frames having curved or polygonal sections composed of two or more plates of rolled or wrought iron with flanged edges, secured together by means of rivets passing through such flanges and through ferrules interposed between them to give any desired enlargement to the posts and leave space for the

Argument of counsel.

passage of counter-braces without cutting away or weakening the post, such posts being completed by bases and capitals of wrought or cast iron riveted thereto, substantially as and for the purposes hereinbefore described.

2. The use of upper chords or compression-beams, formed by a combination of I-shaped rolled beams or channel-bars, or both, riveted at top and bottom to plates of wrought-iron, so as to form in each chord or beam a series of rectangular tubes or cells, for the purpose of affording great transverse strength to support the weight of passing trains in railroad or other bridges, combined with great resistance to compressive force, substantially as hereinbefore described.

3. The use for the lower chords of truss-frames of wide and thin rolled bars with enlarged ends, formed by upsetting the iron, when heated, by compression into molds of the required shape for the purpose of increasing the density, toughness and strength of the eye of the rod, and enlarging the eye without diminishing its transverse section, substantially as hereinbefore described.

In testimony whereof we, the said Jacob H. Linville and John L. Piper, have hereunto set our hands.

JACOB H. LINVILLE.
JOHN L. PIPER.

In presence of—

A. S. NICHOLSON,
W. D. LEWIS.

Messrs. Henry Baldwin, Jr., and Theo. Cuyler. for appellant:

It is respectfully submitted that the form of the chord-bars between the wide and thin drilled eyes or ends is not of the essence of the first claim of the patent of 1862; in any event, not so indispensable that this claim could not be infringed by the construction of the lower chords and mode of applying the same in combination with the posts and outer parts of the truss, substantially as described in that patent and specified in the first claim thereof, with so slight

Argument of counsel.

a variation as that of making the eye-bars with wide and thin drilled ends, but with narrower or thicker or round or square intermediate section, even if such variation of the intermediate section amounted to a patentable *improvement* of this feature or ingredient of the construction or combination, claimed: that it is not *essential* that the roadway or the floor-beams and track should be supported upon the eye-bars without the employment of auxiliary beams for that purpose; but that the first claim of the patent of 1862, instead of being only for wide and thin drilled eye-bars which are wide and thin from end to end, is for a combination, one element of which comprises substantially such bars having wide and thin drilled ends or eyes adapted to and applied in the construction of lower chords of truss bridges, the other elements of the combination being correspondingly adapted and applied to the eye-bars, all substantially as described in the specification.

Winans v. Denmead, 15 How. 342 [6 Am. & Eng. 107].

And it is respectfully submitted that the Court below erred in its construction of this claim and in dismissing the bill thereupon.

The sole point made by law by the appellees in respect to this third claim of the patent of 1865 was, that as they had only made the bars, and had not used them, they had not infringed the claim, which only comprised use *in a bridge*. But it is respectfully submitted that this is not the proper or fair construction of the third claim of the patent of 1865.

The Circuit Court seems to have been misled by the argument for defendants based upon the "disclaiming" clause of the specification, and really decided that the patentees had disclaimed everything except the right to use such eye-bars in bridges; whereas we contend that the only effect of the disclaiming paragraph is to discriminate the subject matter of the claim—the thing made in the manner described,—that is, by upsetting the heated ends in molds of the required shape for the purposes specified—from any pe-

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culiar or particular method or process of applying requisite pressure.

This is a claim for a product in which the process inheres so far as that process characterizes the product and distinguishes it from the product of prior processes.

Ames v. Howard, 1 Sumn. 485.

The opinion of the Court below cites only so much of the claim as stops at the word "shape," while the remainder of it materially modifies the first part. The disclaimer is not so broad as stated by the Court. The exclusive right to make chord-bars in *any* mode is not disclaimed, nor is it declared that anyone may make the *chord-bars in the manner described*, and that no encroachment upon their rights is committed until the bars are used by being put into a bridge.

Certainly the Court below could not rightly find in this disclaimer a license by the patentees to the public to make and sell these bars, without finding that license also to include the right to use them when thus made and sold by the licensees.

If the Court should accept the construction of the first claim of the patent for 1862 which has been submitted on behalf of the appellant, it can scarcely be doubted that the appellees must be held to have infringed that claim by making, constructing and vending to Kellogg, Clark & Co., to be used in the La Salle bridge, the bases of the posts having the ribs projecting downwards for the insertion of the lower chords and eye-bars intended to be inserted between these ribs and fastened, all substantially as described in this patent.

If the court should hold the third claim of the patent of 1865 to be so narrow as to cover only the *use* of the eye-bars made as described, by an upsetting process, it is still insisted that the appellees have infringed the patent, because they have made and used, and sold to others to be used, the thing patented. And that the court below, having found "that it has shown that the bridge at La Salle, Ill., was

Argument of counsel.

built by Kellogg, Clark & Co., who obtained the iron for it from respondents, and that the bottom chords used in it were like those claimed by the complainants," erred in finding that this proof of infringement falls short of fixing any accountability upon the respondents.

And it is respectfully submitted that the court below erred in dismissing the bill as to this claim, as it erred in the construction of the claim itself.

It is respectfully submitted that the decree of the court below should be reversed, and the cause remanded with instructions to enter a decree for the complainant on the first claim of the patent of 1862, and on the third claim of the patent of 1865.

Mr. George Harding, for appellee :

The answer to the charge of infringement is : First, the defendants being only iron-workers, never built the bridge, and therefore never put any lower chords into the bridge.

Secondly, the only bridge which is in any way sought to be specifically connected with the defendants, is the La Salle bridge. Upon cross-examination Linville admits that the lower chords were not *wide and thin* eye-bars in that bridge, but that they were round in section.

The defendants never *made any wide and thin bars* of wrought iron, or, in other words, bars of wrought iron that had the shape or sectional form of a joist or that were intended to perform the function of a joist or any other function than that of mere tensile rods.

As to the charge of infringement of the third claim of the patent of 1865 which consists in the formation of the eye-bar by upsetting the iron at the ends, the defendant's case is this :

These iron bars have long been formed by being upset at the end where the pin goes through and they must always be so formed in order to secure sufficient width at the end to prevent the breaking out of the eye by the pin.

The defendants, moreover, do not put these eye-bars into

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bridges, but merely make and sell them as merchandise. The plaintiffs make no claim and cannot charge anybody who merely *makes* these eye-bars with being infringer, for in their patent of 1865, occurs this language: "*We do not claim the upsetting of bars* in the manner described." * * * They say we do not claim the upsetting of bars in the manner described nor any peculiar mode of performing the operation, but merely the use of chord-bars for bridges, the eyes of which are thus formed.

Mr. Justice BRADLEY delivered the opinion of the court:

The appeal in this case is brought to review the decree of the Circuit Court dismissing the bill of complaint, which charges an infringement of two certain patents belonging to the complainants. These patents were for improvements in iron truss bridges. The first was granted to J. H. Linville and his assignee, J. I. Piper, January 14th, 1862; the second, to the same parties, October 31, 1865. The particular claims upon which the contest arises before us are the first claim in the former patent, and the third in the latter. Both of these claims relate to the lower chords of the truss, the primary office of which is to hold the lower parts of the structure together, and keep them from spreading; but which are also employed in the construction of the patentees, to sustain the cross-sills which support the railroad.

We do not think we ought to disturb the decree of the Circuit Court in this case. We regard the construction of the claims in question insisted upon by the appellee as substantially correct. Those claims are the first in the patent of 1862, and the third in that of 1865. It is manifest that, in the former, the form of the chords is deemed material, or, at least, it is made so by the terms of the specification and claim. They are flat bars placed on edge so as to sustain superincumbent weight, as well as perform the office of tension braces. They are made in this form in order that the floor beams of the railroad may be directly

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laid on them. This is apparent from the whole tenor of the specification. The patentee, in describing his invention, commences by saying: "My invention consists: 1, in a novel construction of the lower chords, and mode of applying the same, in combination with the posts and other parts of the truss." Again: "The bottom chords are each composed of a series of wide, thin eye-bars, of wrought iron, of a length corresponding with the distances between the posts on one side of the truss, placed on edge to enable them to give vertical support to the roadway, etc." Then, after showing that these eye-bars or chords are made wider at the ends where the eye-holes are made for inserting the connecting pins or bolts, which connect the different sections together, and explaining the general construction of the bridge and its different parts, he concludes with the following claim: "I do not claim the use of eye-bars or links as chains of suspension bridges; but what I claim as my invention, and desire to secure by letters patent, is: 1, the construction of the lower chords of truss bridges of series of *wide and thin* drilled eye-bars, C C *applied on edge* between ribs S S on the bottoms of the posts, and connected by pins P P supported in the diagonal tension braces, D and E, all substantially as herein described." Words cannot show more plainly that the claim of the inventor does not extend to any other eye-bars or chords than such as are made wide and thin, and applied on edge. As those constructed by the defendant are cylindrical in form, only flattened at the eye for insertion between the ribs or projections of the posts, it is plain that no infringement of this claim of the patent has been committed.

The other claim in question, namely: the third claim of the patent of 1865, is for the employment in truss bridges of just such wide and thin chords as above described, whose ends are enlarged or widened by being upset (when heated) by compression into molds in the manner described in the specification of the patent. The mode of upsetting, widen-

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ing and shaping the ends of the bars is by placing the ends, after the bars have been rolled into proper shape and size, and the ends heated, into a die-box of the regular form, and then firmly locking them in place, and with great power pressing them up endwise with a movable head-die until the hot iron fills the die-box. By this pressure the ends are upset, widened and compressed into the desired shape. It is claimed that by this process the ends are made stronger and better able to sustain the great strain to which they are subjected when in place in the truss. The defendant upsets the ends of the chords made by it before putting them into the die-box, then places them in the box, and flattens them into shape in much the same way that is described in the patent. The process is not in all respects the same, but perhaps sufficiently alike to constitute an infringement if the claim of the patent were only for the process of forming the widened ends. But it is not so, and probably the patent could not be sustained if it were; for spike-heads, nail-heads, bolt-heads, and many other things of that sort are formed by upsetting and compressing hot iron in the same way. It is only the use in truss bridges of flat bars or chords, with the ends upset and widened in this manner, which the patentees claim as their invention. Their claim is for a particular product, made by a particular process and applied to a particular use. The patent of 1865 refers to that of 1862, and the invention sought to be patented is claimed as an improvement on the prior one. The patentees say: "Our invention consists of certain improvements in the construction of the wrought-iron truss bridge for which letters patent of the United States were granted to us on the 14th of January, 1862. In the truss bridge shown in the accompanying drawings the general arrangement of the parts is similar to that shown in our previous patent just referred to—the improvements forming the subject-matter of this invention relating to the following particulars:" [then, after specifying certain improvements in the posts

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and in the upper chords of the truss, the patentees proceed as follows:] "3. The use of bottom chords of thin wrought iron plates, the eye of which at each end, instead of being cut out of a rolled plate and drilled or forged into shape, is upset under strong compression, so as to give at the eye of the bar a degree of strength equal or superior to that of the bar at any point between the eyes." Then, describing the various parts of the truss in its improved construction, in speaking of the bottom chords (which are those in question) the patentees say: "The bases of the posts A are connected at their bases longitudinally by the lower chords D, of which four may be placed parallel to each other, on each side of each panel. They are made of *thin bars of rolled iron*, of sufficient depth, and *placed on edge*, so as to support the roadway, and are attached to the bases of the posts by the connecting pins N which pass through the hole or eye near the end of these bars." Again, in summing up, the patentees say: "The lower chords D consist of *wide, thin* rolled iron bars, with enlarged ends, which are made by upsetting the rolled bars by compressing them into the desired shape in molds into which the heated iron is forced under immense pressure, etc." And, then, in order to exclude the idea that they claim the mode of compressing the ends, they add: "We do not claim the upsetting of iron bars in the manner described, nor any peculiar mode of performing the operation, but merely the use of chord-bars for bridges, the eyes of which are thus formed so as to give additional strength to the bar where it is so much needed." The claims are then set forth categorically in the usual manner, the third claim (the one in question) being in these words: "3. The use for the lower chords of truss frames of *wide and thin* rolled bars with enlarged ends, formed by upsetting the iron, when heated, by compression into molds of the required shape, for the purpose of increasing the density, toughness, and strength of the eye of the rod, and enlarging the eye, without diminishing its transverse section, substantially as hereinbefore described."

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Here, again, the patentees clearly confine themselves to "*wide and thin*" bars. They claim the use in truss bridges of such bars when the ends are upset and widened in the manner described. It is plain, therefore, that the defendant Company, which does not make said bars at all, but round or cylindrical bars, does not infringe this claim of the patent. When a claim is so explicit, the courts cannot alter or enlarge it. If the patentees have not claimed the whole of their invention, and the omission has been the result of inadvertence, they should have sought to correct the error by a surrender of their patent and an application for a reissue. They cannot expect the courts to wade through the history of the art, and spell out what they might have claimed, but have not claimed. Since the Act of 1836, the patent laws require that an applicant for a patent shall not only, by a specification in writing, fully explain his invention, but that he "shall particularly specify and point out the part, improvement or combination which he claims as his own invention or discovery." This provision was inserted in the law for the purpose of relieving the courts from the duty of ascertaining the exact invention of the patentee by inference and conjecture, derived from a laborious examination of previous inventions, and a comparison thereof with that claimed by him. This duty is now cast upon the Patent Office. There his claim is, or is supposed to be, examined, scrutinized, limited and made to conform to what he is entitled to. If the office refuses to allow him all that he asks, he has an appeal. But the courts have no right to enlarge a patent beyond the scope of its claim as allowed by the Patent Office, or the appellate tribunal to which contested applications are referred. When the terms of a claim in a patent are clear and distinct, as they always should be, the patentee, in a suit brought upon the patent is bound by it. *Merrill v. Yeomans*, 94 U. S. 573. [p. 203 *ante*]. He can claim nothing beyond it. But the defendant may at all times, under proper pleadings, resort to prior use and the

Notes and Citations.

general history of the art to assail the validity of a patent or to restrain its construction. The door is then opened to the plaintiff to resort to the same kind of evidence in rebuttal ; but he can never go beyond his claim. As patents are procured *ex parte*, the public is not bound by them, but the patentees are. And the latter cannot show that their invention is broader than the terms of their claim ; or if broader, they must be held to have surrendered the surplus to the public.

The construction which we have felt bound to give to the patent obviates the necessity of expressing any opinion upon the other point made by the court below, namely : that the patents only covered the use of the chords in question in truss bridges, and not the making of such chords, which latter is all that the defendant company is shown to have done.

The decree of the Circuit Court must be affirmed, with costs.

95 U. S. 279.

Notes :

1. Form, of the essence of the particular invention:

Carver v. Hyde, 16 Pet. 315 [4 Am. & Eng. 367].

Washing-Machine Co. v. Tool Co., 20 Wall. 342 [9 Am. & Eng. 305].

Werner v. King, 96 U. S. 218.

Clark v. Beecher Mfg. Co., 115 U. S. 79.

4. Correction of error by reissue where entire invention is not claimed:

Merrill v. Yeomans, 94 U. S. 568 [p. 203 *ante*].

Notes and Citations.

7. Patentee is bound by his claim :

- Carver v. Hyde, 18 Pet. 513 [4 Am. & Eng. 367].
Vance v. Campbell, 1 Black, 427 [7 Am. & Eng. 117].
LeRoy v. Tatham, 14 How. 156 [7 Am. & Eng. 29].
Schumacher v. Cornell, 96 U. S. 549 [p. 443 *post*].
Water-Meter Co. v. Desper, 101 U. S. 332.
Fay v. Cordesman, 109 U. S. 408.
Thompson v. Boisselier, 114 U. S. 1.
Sargeant v. Hall Safe & Lock Co., 114 U. S. 63.
Mnfg. Co. v. Ansonia Brass Works, 114 U. S. 447.
Shepard v. Carrigan, 116 U. S. 593.
Mnfg. Co. v. Sargent, 117 U. S. 373.
Sutter v. Robinson, 119 U. S. 530.
Snow v. Railway, 121 U. S. 617.
Eames v. Andrews, 122 U. S. 40.
Crawford v. Heysinger, 123 U. S. 589.
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8. Failure to claim an abandonment :

- Battin v. Taggart, 17 How. [6 Am. & Eng. 97] *contra*.
Suffolk Co. v. Hayden, 3 Wall. 315 [7 Am. & Eng. 405].
Miller v. Brass Co., 104 U. S. 350.
Matthews v. Boston Machine Co., 105 U. S. 54.
Clements v. Odorless Co., 109 U. S. 641.
Eames v. Andrews, 122 U. S. 40.
Parker & Whipple v. Yale Clock Co., 123 U. S. 87.
Hoskins v. Fisher, 125 U. S. 217.
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Patents in suit:

No. 34,183. Linville & Piper. January 14, 1862. Iron
Truss for Bridges.

Notes and Citations.

No. 50,723. Linville & Piper. October 31, 1865. Wrought
Iron Bridge.

OTHER SUITS ON SAME PATENT :

Keystone Bridge Co. v. Phœnix Iron Co., 1872. 5 Fish. 468 ; 9
Phila. Rep. 374.

Cited :

IN SUPREME COURT IN :

Railroad Co. v. Mellon, 1881. 104 U. S. 118 ; Bk. 26 L. ed. 639.
Duff v. Pump Co., 1883. 107 U. S. 636 ; Bk. 27 L. ed. 517.
Railroad Co. v. Locomotive Co., 1884. 110 U. S. 490 ; Bk. 28 L.
ed. 222.
Yale Lock Mnf. Co. v. Greenleaf, 1886. 117 U. S. 554 ; Bk. 29
L. ed. 952.
White v. Dunbar, 1886. 119 U. S. 47 ; Bk. 30 L. ed. 303.

IN CIRCUIT COURTS IN :

Union Paper Bag Machine Co. v. Pultz & Walkley Co., March,
1879. 16 Blatch. 76 ; 4 Ban. & Ard. 181.
Fetter v. Newhall, April, 1884. 20 Fed. Rep. 113 ; 28 O. G. 285.
Norton v. Haight, November, 1884. 22 Fed. Rep. 787.
Blades v. Rand, McNally & Co., March, 1886. 27 Fed. Rep. 93.
Thompson v. Gildersleeve, February, 1888. 34 Fed. Rep. 43.
Polsdorfer v. St. Louis Wooden Ware Works, May, 1888. 37 Fed.
Rep. 57.

Notes and Citations.

IN CANADIAN COURTS IN:

Funck, May, 1878. 14 O. G. 157.

Ex parte Woodruff, February, 1880. 17 O. G. 453.

Ex parte Skinner, March, 1881. 19 O. G. 662.

IN TEXT-BOOKS :

Merwin on Pat. Inv't., 1883, p. 622.

Walker on Pats., 1883, p. 133.

Oct., 1877.]

BRIDGE CO. v. IRON CO.

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Opinion of the court.

WILLIAM F. COCHRANE ET AL., APPELLANTS, v.
JOSIAH W. DEENER ET AL.

95 (5 Otto) U. S. 355-356. Oct. Term, 1877.

[Bk. 24, L. ed. 514.]

Submitted December 11, 1877. Decided December 17, 1877.

Motion to vacate on ground of collusive decree.

1. While the Supreme Court would not hesitate to set aside a decree collusively obtained, the proof ought to be very clear to induce it to do this at the instance of strangers to the suit, though incidentally affected by the decision of questions involved. (p. 396.)
2. Where the decision on a patent was made the basis of applications for injunctions against third parties in the Circuit Court, and it appeared that the case on the part of the appellees was very imperfectly presented in consequence of conditional arrangements with appellants, a motion to vacate the decree on the ground of collusion was refused, but it was *held* that third parties who had not been heard should not be concluded from having a further hearing in a future case. (p. 397.)

Appeal from the Supreme Court of the District of Columbia.

On motion to vacate decree.

The case is sufficiently stated by the court.

Mr. George Harding, in support of motion.

Mr. Matt H. Carpenter, in opposition thereto.

(Argued orally on the motion, no briefs being filed in the case.)

Mr. Justice BRADLEY delivered the opinion of the court:

After a careful examination of the evidence adduced on the motion to vacate the decree in this case, we see no

95 U.S. 355.

* See Explanation of Notes, page III.

Notes and Citations.

ground to believe that the appellants are chargeable with any collusion with the appellees in reference to the argument of the appeal. On the contrary, the weight of the evidence is, that they repelled any arrangement or proposition which might look to that end. Whilst we would not hesitate to set aside a decree collusively obtained, the proof ought to be very clear to induce us to do this at the instance of strangers to the suit, though incidentally affected by the decision of the questions involved.

At the same time, as the decision in this case is made the basis of applications for injunctions against third parties in the Circuit Court, it is right that we should say, that, in the argument of the appeal before us, the case on the part of the appellees was, as it seemed to us, very imperfectly presented; and the evidence laid before us, on this motion, demonstrates the fact that the appellees, in consequence of the conditional arrangement with the appellants, which they secured before the argument was had, or for some other cause, omitted to prosecute their defence with that degree of zeal and efficiency which the importance of the case would otherwise have demanded. The result was, that the labor of the court, and its liability to overlook points of weight and importance were greatly increased. As the case was presented to us, we see no cause for changing our views. But, under the circumstances, we think that third parties, who had no opportunity of being heard, and whose interests as opposed to the Cochrane patents are very important, should not be concluded from having a further hearing upon it whenever a future case may be presented for our consideration.

The motion is denied, with costs.

95 U. S. 355-356.

Patents in suit:

- No. 37,317. Cochrane, Wm. F. January 6, 1863. Re-issue No. 5,841. April 21, 1874. Bolting Flour *a*.
No. 37,318. Cochrane, Wm. F. January 6, 1863. Re-issue No. 6,030. August 25, 1874. Bolting Flour *b*.

Notes and Citations.

- No. 37,319. Cochrane, Wm. F. January 6, 1863. Bolting Flour *c*.
No. 37,320. Cochrane, Wm. F. January 6, 1863. Bolting Flour *d*.
No. 37,321. Cochrane, Wm. F. January 6, 1863. Re-issues Nos. 6,594 and 6,595. August 17, 1875. Bolting Flour *e*.
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OTHER SUITS ON SAME PATENT:

- American Middlings Purifier Co. *v.* Atlantic Milling Co., 1877. 4 Dill. 100 *a, b, c*.^{*}
American Middlings Purifier Co. *v.* Christian, 1877. 4 Dill. 448; 3 Ban. & Ard. 42 *a, b, c*.
Cochrane *v.* Deener, 1877. 94 U. S. 780 [p. 288 *ante*] *a, b, c, d, e*.
American Middlings Purifier Co. *v.* Vail, 1878. 15 Blatch. 315; 4 Ban. & Ard. 1 *a, b*.
American Middlings Purifier Co. *v.* Atlantic Milling Co., 1879. 5 Dill. 127; 4 Ban. & Ard. 148; 15 O. G. 467 *a*.
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Cited:

IN TEXT-BOOKS:

- Merwin on Pat. Invt., 1883, p. 356.
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^{*}The letter *a, b, c*, following the patent is repeated after the title of the case to indicate that the suit was on that particular patent.

[illegible]

Syllabus.

DANIEL EDDY ET AL., APPELLANTS, v. PAUL DENNIS. PAUL DENNIS, APPELLANT, v. DANIEL EDDY ET AL.*

95 (5 Otto) U. S. 560-570. Oct. Term, 1877.

[Bk. 24, L. ed. 363.]

Reversing Dennis v. Eddy, 4 Fish. 423.

Argued October 19, 1877. Decided October 29, 1877.

Particular patent construed. Infringement.

1. Claim 2, of reissued letters patent No. 1,515, P. Dennis, August 4, 1863 (original patent No. 19,412, February 23, 1858), Cultivator for "the combination with the beam, A, and the mold-board, B, with the adjustable wheel, F, arranged and operating substantially as used for the purposes specified," *construed* and *held* that the adjustable wheel is the important feature of the claim and is not infringed by defendant's plow in which this element is absent. (p. 410.)
2. Claim 2, for "the inclined mold-board, B, formed and mounted substantially as described, and constructed highest at its outer edges, so as to form on each side of the standard, A, a recess, c, through which recess a portion of the earth may, after rising upon the mold-board descend into the furrow at the rear of the plow," *construed* to provide for a cut or carved out recess for the purpose intended and *held* wanting in novelty. (p. 410.)

Cross appeals from the Circuit Court of the United States for the Northern District of New York.

The case is stated by the court.

The specifications and drawings of the Dennis reissue are as follows :

*See Explanation of Notes, page III.

Statement of the case.

PAUL DENNIS, OF BEMUS HEIGHTS, NEW YORK.

IMPROVEMENT IN CULTIVATORS.

Specification forming part of Letters Patent No. 19,412, dated February 23, 1858 ; Reissue No. 1,515, dated August 4, 1868.

To all whom it may concern :

Be it known that I, Paul Dennis, of Bemus Heights, in the county of Saratoga and State of New York, have invented a new and improved Shovel-Plow ; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Fig. 1 is a side view of my invention ; Fig. 2, a back view of the same ; Fig. 3, a plan or top view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

This invention consists in a peculiar manner of constructing or forming the upper edge of the mold-board with recesses, so that the earth, as the implement is drawn along, will pass over the top of the mold-board and drop into the furrow behind it and partially or wholly fill the same, thereby leaving the earth in a level and also in a loose, light, or friable state, permeable to air and moisture, and at the same time preventing earth, sods, stones, etc., being cast against the growing plants by the mold-board—a contingency of frequent occurrence in using the ordinary plows.

The invention further consists in the employment or use of a gauge applied to the implement in such a manner as to admit of the mold-board penetrating the soil at a greater or less distance, as may be desired.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a metallic bar, which is curved so that the front part will form the beam of the implement and the back part an inclined portion, to which the mold-board B

Statement of the case.

is firmly attached. The form of the bar A is clearly shown in Fig. 1.

To the bar A, near the center of its curve or bend, the lower ends of handles C C are attached by a bolt, as shown at *a*. These handles are braced by a V-shaped support, D, the lower end of which is secured to the bar A, as shown at *b*.

The mold-board B is of shovel form, and is much like those usually made, with the exception that its upper edge or part is scalloped out so as to form a recess, *c*, at each side of the bar A, as shown clearly in Figs. 2 and 3, said recesses extending down nearly or about one-half the length of the mold-board. The mold-board may be constructed of malleable cast-iron.

E is the point or share, which is constructed of steel, the lower end being pointed and its sides slightly rounded or curved, so that the form of the mold-board and point or share, when connected together, will closely approximate to those which are cast in one piece, the recesses *c* being excepted. The point or share E may be attached to the mold-board B by bolts *d*, which are attached to the point or share and pass through the projecting plate, *e*, at the under side of the mold-board. (See Figs. 1 and 2.)

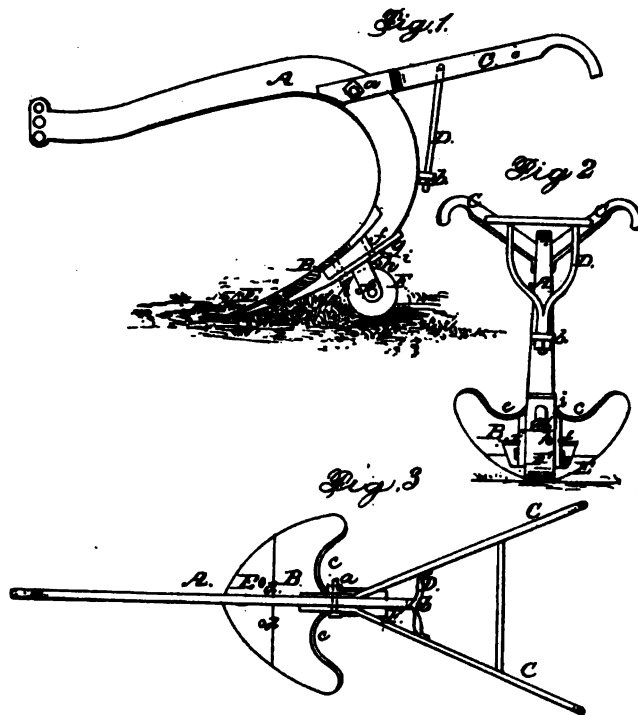
F is an adjustable metallic roller, which is attached to the bar A just back of the mold-board B. The axis of the roller F is fitted or has its bearings in arms *f f*, which project obliquely from a plate, *g*, said plate being slotted longitudinally, so that the bolts *h h*, which secure the mold-board to the bar may pass through said slot, the bolts *h* having each a nut, *i* on them, by screwing up which the plate *g*, and consequently the roller F, may be secured higher or lower, as desired.

From the above description it will be seen that the point or share E and mold-board B may be made to penetrate the soil at a greater or less depth, as may be desired, by adjusting the roller E and draft-chain, said roller serving as a gauge or guide, and the draft-chain being adjusted at the end of the beam, so that the draft may aid the roller and the point

P. DENNIS.
Shovel-Plow.

No. 1,515.

Reissued Aug. 4, 1863.



Statement of the case.

or share be made to have a tendency to penetrate the soil or otherwise. This will be understood by referring to Fig. 1, in which it will be seen that by depressing or lowering the roller on the bar the mold-board will be less inclined, and consequently, if the draft-chain or whiffle-tree be properly adjusted at the end of the beam, the point or share will have a greater tendency to penetrate the earth than if the roller were higher up on the bar, the roller always bearing upon the earth. The mold-board B does not cast the earth from either side, as usual; but the earth, in consequence of the recesses *c c*, will pass over the top of the mold-board and drop behind it, so that no furrow will be formed or left behind the mold-board; but the soil will be left in a loose light state, permeable to air and moisture, and all grass, weeds, roots, and the like perfectly cut up. The mold-board by operating in this manner does not, of course, cast earth, sods, or stones upon the growing plants, as is frequently the case in using the ordinary shovel-plows, which cast the earth from either side of them. This is an important feature of the invention.

The point or share E also, in consequence of being made separate of steel and attached to the mold-board, may be readily detached and sharpened, and when much worn a new one may be attached to the mold-board. The plow is therefore not only rendered far more durable, but it may always be kept in perfect order, for the mold-board will last an indefinite period of time, it not being subjected to much wear, and the plow will always be in order, provided the point or share is kept in proper condition. By my improvement this can be done; but it cannot be done when the mold-board and share are cast in one piece. The ordinary shovel-plows cannot be regulated by the draft-chain so as to regulate the depth of the furrow, for they have no guide, the point or share merely penetrating the soil. The roller F in my improvement diminishes friction and serves as a more perfect guide than the landside of ordinary plows.

Having thus described my invention, I wish it distinctly

Argument of counsel.

understood that I do not claim broadly the idea of passing a portion of the earth over the mold-board into the furrow behind, as I am aware that this has before been done; neither do I claim applying a movable mold-board to one of the outer edges of the share, as described in an application of J. Drummond, rejected October 25, 1844; neither do I claim the use of projecting blades at the outer ends of the share, as described in the patent of B. Langdon, granted June 22, 1842, and others; but,

Having thus described my invention, what I claim as new therein, and desire to secure by letters patent, is—

1. The inclined shovel mold-board B, formed and mounted substantially as described, and constructed highest at its outer edges, so as to form on each side of the standard A a recess, c, through which recesses a portion of the earth may, after rising upon the mold-board, descend into the furrow in the rear of the plow.

2. The combination, with the beam A and mold-board B, of the adjustable wheel F, arranged and operating substantially as and for the purposes specified.

PAUL DENNIS.

Witnesses :

HENRY W. DENNIS,
JOSEPH A. KING.

Mr. E. F. Bullard, for Dennis :

It is apparent that the defendants have appropriated the results of the plaintiff's ingenuity as fast as he made them public. Before 1855, defendants made the old style of shovel plow mold-board with round point. Plaintiff made a point to the latter in January, 1855. Defendants did the same thing in November following. Plaintiff made a mold-board with recesses, in January, 1858. Defendant followed suit in May or November, 1858. Plaintiff got up the pattern of Exhibit G, Dennis, in January, 1859. Defendant made plows just like Exhibit G, Dennis, the next year. These facts make out a pretty clear case of "appropriation."

Opinion of the court.

Judge Woodruff, in the court below, states that "Recesses in that form do not appear to have been before made in such mold-board. The proofs show that such construction is useful."

At the time of the decree no plow had been made with recesses of any form except under the Dennis patent. It was shown and not disputed but that his mold-board was the best form ever made. The appellants *conceded* that, by giving up the old form and adopting ours.

It is a fact conceded on all hands that the Dennis plow is so useful that it at once superseded all other shovel-plows, and, therefore, the appellants at once began to use it.

Mr. Esek Cowen, for Eddy et al:

The language of the claim, as well as the official action of the examination, shows that the intent was to allow a claim for the mold-board with its recesses, in combination with the other parts of the plow as described. Yet the Court below held that the claim was for the mold-board and recesses alone, being exactly what the office had twice rejected.

If the claim is to be construed as covering the mold-board and recesses alone, it is void for want of novelty. The patent of Langdon is a device that comes directly within the first claim of complainant's reissue. Nor can any point be made upon the fact that the mold-board in the patent is single, while those in the Langdon plow are double, or that the former is convex while the latter is straight. The man who first made a mold-board, with the outer edge so formed that it would sweep the side of the furrow, and clean it of weeds, and depressed at the top, so that the earth could pass over and fall into the furrow, exhausted all the invention of which the subject was capable. To do the same thing, in the same way, with a mold-board of a different shape, did not amount to invention.

Mr. Justice HUNT delivered the opinion of the court :

On the trial of the first of these actions, Dennis, who was

Opinion of the court.

the plaintiff therein, (a) recovered damages against Eddy and others for an infringement of his letters patent for an improvement in shovel plows. The original letters were issued on the 23d day of February, 1858, and the patent was reissued on the 4th day of August, 1863.

(b) The action was commenced in December, 1866, and the damages demanded were for a violation of the reissued patent (c).

The claim made under the reissued patent is in the words following:

"Having thus described my invention, I wish it distinctly understood that I do not claim broadly the idea of passing a portion of the earth over the mold-board into the furrow behind, as I am aware that this has before been done. Neither do I claim applying a movable mold-board to one of the outer edges of the share, as described in an application of J. Drummond, rejected October 25, 1844. Neither do I claim the use of projecting blades at the outer ends of the share, as described in the patent of B. Langdon, granted June 22, 1842, and others; but—

Having thus described my invention, what I claim as new and desire to secure by letters patent is, 1. the inclined shovel mold-board B, formed and mounted substantially as described, and constructed highest at its outer edges, so as to form on each side of the standard A a recess c, through which recesses a portion of the earth may, after rising upon the mold-board, descend into the furrow in the rear of the plow.

2. The combination, with the beam A and mold-board B, of the adjustable wheel F, arranged and operating substantially as and for the purposes specified."

The original patent claimed only what is here described as the second claim. The point of the reissue is in the claim as first above set forth.

95 U. S. 564-565.

(a) Otto begins opinion here, prefixing "Dennis, the complainant below, obtained an injunction and."

(b) Otto omits from b-c.

Opinion of the court.

The use of the shovel-plow is in cultivating the soil between the rows of growing crops, after they are somewhat advanced in their growth, to stir up and loosen the soil, and to free it from weeds. This plow is distinct in many parts of its construction, as well as in its intended effect, from the plow used in breaking up the soil; that is, from the plow in common use.

In first considering the claim contained in both the original and reissued patents, and in the latter described as the second claim, we remark, that we concur entirely with the learned judge who tried this case at the circuit, in his view of it.

The adjustable wheel is the important feature of this claim. The bar or beam and the mold-board suggest nothing in the way of novelty, invention, or of peculiarity. The use of the base of a plow as a fulcrum, by means of which the plowman can raise or lower the point of the plow, or turn it in different directions, has long been in use, and on nearly every kind of plow. Peter Dutton's stay iron, rejected in 1865, affords an illustration.

That an adjustable wheel was deemed by the inventor to be quite a different thing from the simple bar or shoe in ordinary use, is manifest from the careful description of its advantages in the original patent. It is described in these words:

"F is an adjustable metallic roller, which is attached to the bar A just back of the mold-board B. The axis of the roller F is fitted or has its bearings in arms (*ff*) which project obliquely from a plate (*g*); said plate being slotted longitudinally, so that bolts (*hh*) which secure the mold-board to the bar, may pass through said slots, the bolts (*h*) having each a nut (*i*) on them, by screwing up which, the plate and consequently the roller may be secured higher or lower, as may be desired."

It is also set forth that the point or share of the plow may be made to penetrate the soil at a greater or less depth, by

Opinion of the court.

adjusting the roller and draught-chain; the roller serving as a gauge or guide, and the draught-chain being adjusted at the end of the beams, so that the draught may aid the roller; the point or share may be made to penetrate the soil or otherwise.

The plows proved to have been manufactured by Eddy & Co., the defendants, have none of them this element of an adjustable wheel or roller. Their plow rests upon a plain bar or shoe of iron. It has no mechanical contrivance for fixing the angle at which the point shall penetrate the earth. This is done by the strength of the plowman, who uses the shoe as a fulcrum for that purpose.

No argument is needed to show that there has been no violation by the defendants of the Dennis patent in this particular.

In considering the effect of the remaining claim of the re-issue, we are greatly aided by the clear and explicit statement of the patentee of what he does not claim as his invention.

There are three mechanical advantages in his plow, which he says he does not claim to have invented:

1. The idea of passing the earth over the mold-board into the furrow behind. This result is really the fundamental advantage in both the plaintiff's and defendants' plows. In other words the principal benefit to be derived from either is found in the fact that the earth, loosened and broken, will be deposited in the furrow behind the plow, the movable mold-boards and the projecting blades at the outer ends of the share both contributing to this result. But the patentee says that he is aware that this had been done before his invention, and he makes no claim to an invention or discovery in this respect.

2. The patentee does not claim the application of a movable mold-board to one of the outer edges of the share. This, he says, was described in an application previously made (in 1844) by Drummond.

Opinion of the court.

3. The patentee does not claim the use of projecting blades at the outer ends of the share. This had been described in a patent granted to Langdon in 1842.

To these disclaimers we may add that he does not make a claim for invention in using the shovel of this plow in an inclined form. He does not even give the angle of inclination at which it shall be used, whether it shall be 75° , like the old plows, or 45° , like this one. Ever since plows have been used, and there is no secular history of man in which the plow and the hoe are not recorded, we may safely believe that there has been an inclination, sometimes greater and sometimes less, in the shovel and mold-board. A perfectly upright shovel would be nearly immovable, except in a light soil and to a very slight depth, while one perfectly flat would be of little value.

Remembering these four items as not being parts of the plaintiff's invention, we are prepared to consider what he claims to have invented and desires to secure by a patent. In his own words, it is "The inclined shovel mold-board B, formed and mounted substantially as described, and constructed highest at its outer edges, so as to form on each side of the standard A a recess (c), through which recesses a portion of the earth may, after rising upon the mold-board, descend into the furrow in the rear of the plow."

An inclined shovel mold-board, simply and alone, is not spoken of as an invention. It had long been in use in other plows. What the claim means to appropriate is a shovel "formed and mounted and constructed as described." There is nothing in the form of mounting, that is, placing it upon the beam of the plow, that is peculiar. It is the construction that gives it effect. How is it formed and mounted and constructed? He says, in the general description, that it is a metallic bar so formed or curved that the front will form the beam of the implement, and the back an inclined portion to which the mold-board is attached, while the upper edge of the mold-board is so scalloped out as to form a recess

Opinion of the court.

over which the earth may pass, to which is attached a metallic adjustable roller, serving as a gauge or guide to regulate the depth that the point shall penetrate the earth.

The defendants insisted that, like the other, this claim also describes a combination, of which the adjustable roller is an essential element, and that there can be no infringement unless the roller is used. There is much force in this argument.

There is also another view of this part of the case. Eliminate from this description, first, the idea of an inclined shovel or mold-board, and, second, the idea of passing the earth over the plow into the furrow, both of which are outside of the plaintiff's invention, and nothing remains, except a recess formed by a scalloped edge on which the earth will pass, and an adjustable roller in connection with the beam of the plow.

As has been before said, the defendants have never used the adjustable roller. The infringement, then, if any, consists in the use of a recess formed by a scalloped edge over which the earth will pass. The learned judge at the circuit held that the patent was good for this claim, and that the defendants had infringed it. We have reached a different conclusion.

We think the use of the expression, "scalloped out so as to form a recess," was not intended to say that the particular form in which the recess was made should be that of a curve. A scallop may, indeed, imply the idea of a curve, but in a vague and indefinite manner. It is as if it had been said, it "shall be so cut out as to form a recess." The formation of the recess was the idea in the mind of the draughtsman, with no reference to any question of curved lines or right lines. That this was the fact, is made evident by the absence of the word "scalloped" in the claim itself, although used in the general description. If that form had been deemed material, it would have been inserted where the patentee sets out with precision what it is that he claims. In

Opinion of the court

the claim, it is described by the words "constructed highest at its outer edges, so as to form on each side a recess" through which the earth may pass. A recess made by the outer edges being higher than the inner parts was the effect intended to be provided for, and that only. If it had been intended to describe a recess made by a curve, to the exclusion of a recess made in any other manner, it was very easy to say so; but the patentee did not so say, and we think he did not so mean.

If the patentee here had been the inventor of the mold-board with a recess for the purpose of passing the earth through it into the furrow behind, and had described his invention in the words used in his reissued patent, would it not have included as well a structure made by right lines as one made by curved lines? In *Winans v. Denmead*, cited by the respondent's counsel, it is said, "Although a particular geometrical form is best for a certain purpose, yet other forms, giving substantially the same result, are infringements. The result need not be the same in degree if it be the same in kind." 15 How. 344 [6 Am. & Eng. 107.]

If this be so, it can scarcely be denied that the words used in this reissued patent include both forms of a recess, and that it thereby claimed what was previously known and in use, to wit: a structure for the passage of the earth into the the furrow behind.

No testimony is given, that the sod will be more thoroughly broken, the earth better pulverized, or the furrows better filled by the passage of the earth through a recess made by curved lines, than by its passage through a recess of the same depth made by straight lines. The plaintiffs, although witnesses, gave no testimony to that effect. Of our own knowledge, we do not know that it is so. As a matter of law, certainly we are not able to decide that the right lined recess is any less efficacious for the purpose desired than a curved line recess.

There is, indeed, testimony to show that the earth and sod

Opinion of the court.

passing over the low mold-boards of the exhibit M were left in a worse condition than when passed over the recess of the Dennis plow.

In speaking on this subject, Henry Holmes says that it left the furrow behind hard and flat as if a log had been drawn between the rows. The witness Broughton speaks of it as throwing a double furrow outward, and as leaving a furrow bare behind.

But neither of these witnesses attribute the excellencies of the one plow or the defects of the other to the existence of curved or straight lines in forming the recess.

To recapitulate :

1. The second claim of the plaintiff's specification, "The combination, with the beam A and the mold-board B, with the adjustable wheel F, arranged and operating substantially as used for the purposes specified," gives no cause of action. It is a claim for a combination, of which the adjustable wheel F is an essential element ; and it is not pretended by any one that the defendants have ever used an adjustable wheel in the plows made by them.

2. The first claim does not cover an inclined shovel mold-board simply, nor does it cover the principle of passing the earth over the recess of the plow into the furrow behind, nor does the claim cover the passage of the earth over a recess formed exclusively with a curved edge. Its effect is to provide for a recess cut or carved out for the purpose intended. This is not novel, the evidence showing many instances prior to the plaintiff's original patent in which the principle and process had been used and patented.

3. There is no evidence to show that there is any advantage in passing the earth through a recess formed by curved lines, rather than through a recess formed by right lines.

For these reasons, the decree of the court below must be reversed (d), and judgment entered for the defendants, dis-

95 U. S. 569-570.

(d) Otto omits from *d-c*, and substitutes "as Dennis has no cause of action, the question of the amount of damages cannot arise." "Decree reversed, and cause remanded with instructions to dismiss the bill with costs."

Notes and Citations.

missing the bill of complaint, with costs. It is ordered accordingly (e).

This is an appeal by Dennis from the decision of the court restricting the amount of his damages. As we have just decided that he has no cause of action, the question of the amount of damages cannot arise.

This case must follow the other, and judgment must be reversed.

95 U. S. 570.

Patent in suit:

No. 19,412. Dennis, P. February 23, 1858. Reissue No. 1,515. August 4, 1863. Cultivator.

OTHER SUITS ON SAME PATENT :

Dennis v. Eddy, 1871. 4. Fish. 423.

Cited:**IN CIRCUIT COURTS IN:**

Sawyer v. Miller, May, 1882. 4 Woods, 472; 12 Fed. Rep. 725.

[illegible]

Syllabus.

ROBERT WERNER, APPELLANT, v. GEORGE E. KING.*

96 (6 Otto) U. S. 218-231. October Term, 1877.

[Bk. 24, L. ed. 613; 13 O. G. 176.]

Reversing King v. Werner, 12 Blatch. 270.

Argued November 16, 1877. Decided November 26, 1877.

Particular patent construed. Infringement. Form.

1. Reissued letters patent No. 3,000, G. E. King, June 23, 1868 (original No. 62,492, February 26, 1867). Fluting Machine for a device for puffing fluted fabric, consisting of a double plated segment of a hollow cylinder, with its arch upward, between the guide plates of which the material passes to the ordinary grooved fluting rolls beyond, *held* not infringed by a spring-pressed detent or finger operating above and in conjunction with a smooth flat plate, over which the material is fed to the rolls, made under letters patent No. 134,621, R. Werner, January 7, 1873. Fluting Machine. The two devices operate on different principles, and are in no sense mechanical equivalents unless complainant claims every method by which a redundancy of material is presented to the rolls for puffing. This he does not do, and if he did, the claim would be fatal. (p. 435.)
2. Where form is of the essence of the invention, it is necessarily material; and if the same object can be attained by a machine different in form, where the form is inseparable from the successful operation of the instrument, there is no infringement. (p. 438.)
3. It is not only necessary to an infringement that the arrangement which infringes should perform the same service or produce the same effect, but *it must be done in substantially the same way.* (p. 438.)

[Citations in the opinion of the court:]

Sickles v. Borden, 3 Blatch. 535. p. 438.

Burr v. Duryee, 1 Wall. 531 [7 Am. & Eng. 224]. p. 438.

* See Explanation of Notes, page III.

Statement of the case.

Appeal from the Circuit Court of the United States for the Southern District of New York.

The case is stated by the court.

The specifications and drawings of the King reissue and of the Werner patent are as follows:

GEORGE EDWIN KING, OF NEW YORK, N. Y.

IMPROVEMENT IN FLUTING-MACHINES.

Specification forming part of Letters Patent No. 62,492, dated February 26, 1867; Reissue No. 3,000, dated June 23, 1868.

DIVISION A.

To all whom it may concern:

Be it known that I, George Edwin King, of the city, county, and State of New York, have invented certain new and useful Improvements in Fluting-Machines; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Fig. 1 is a front elevation of a fluting-machine constructed according to my invention. Fig. 2 is an end elevation of the same. Fig. 3 is a detached section representing a portion of the same. Fig. 4 is a plan view of a piece of the fluted puffing, for the manufacture of which my invention is intended.

Similar letters of reference indicate corresponding parts in all the figures.

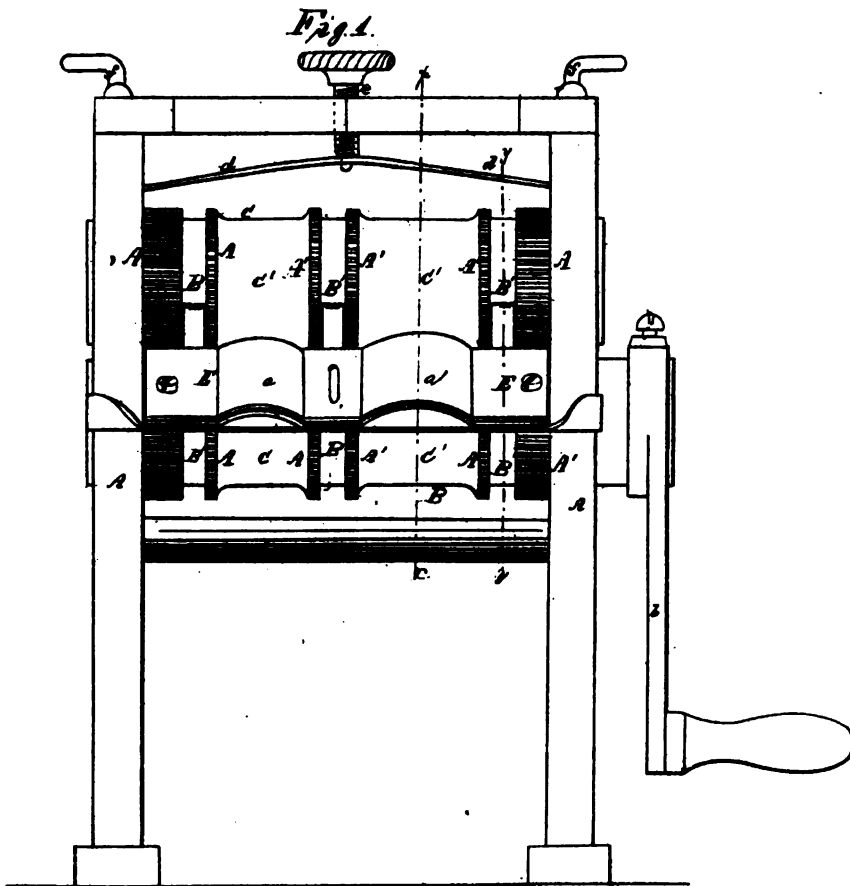
This invention is designed for making puffing applicable to shirt-bosoms, trimming, or other purposes of dress, in which the article, as it issues from the machine, is (without having recourse to laundering) delivered in a complete form,

Sheet 1 - 2 Sheets

G. E. King
Fluting Mach.

Nº 3000

Reissued Jun. 23 1868.

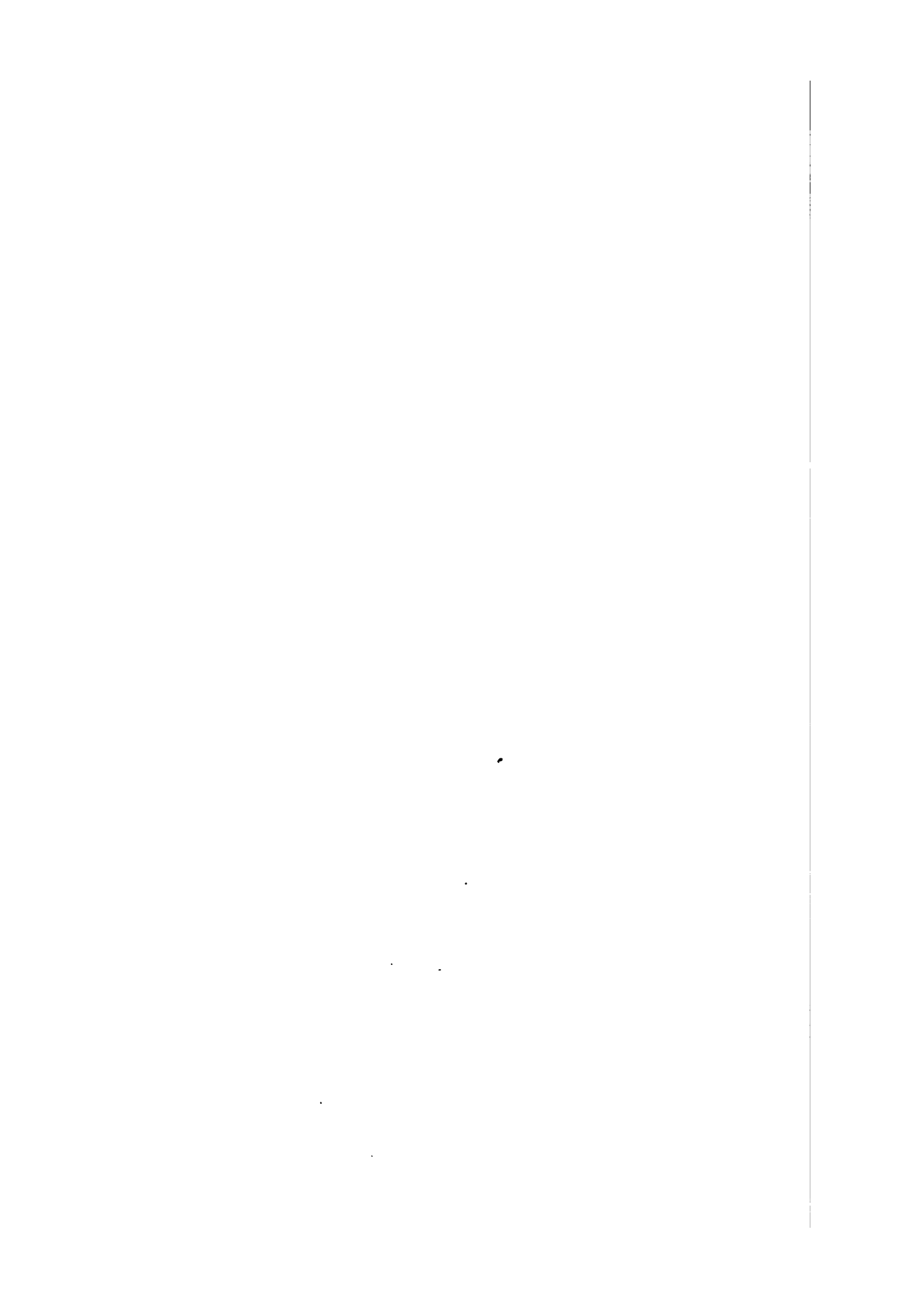


Witnesses:

W. H. Kelly
W. H. Kelly

Inventor:

G. E. King

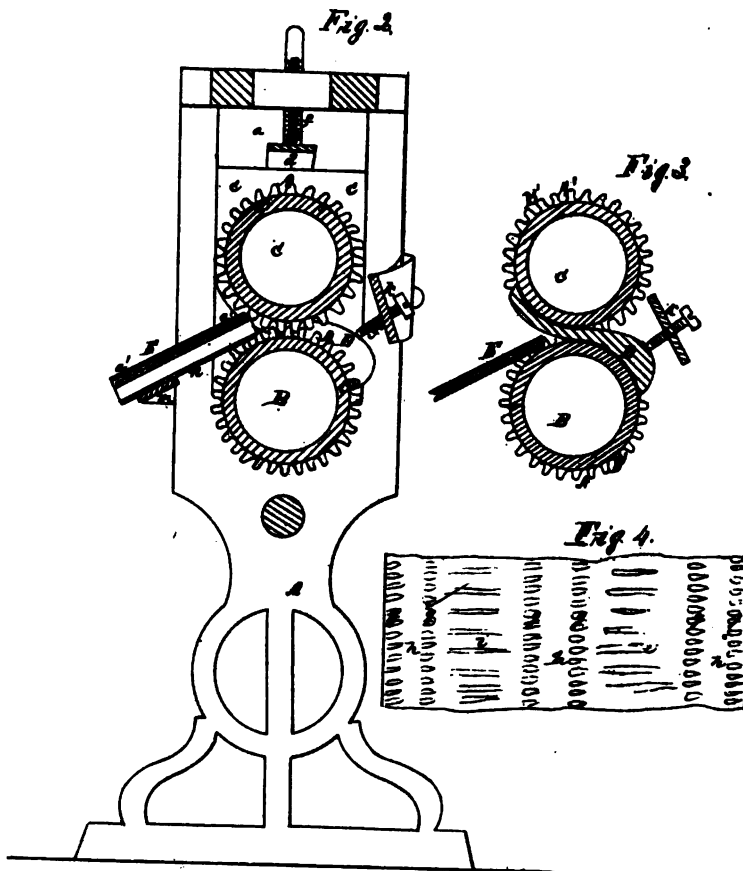


Sheet 2. 2 Sheets.

G. E. King.
Fluting Mach.

Nº 3000.

Reissued Jun 23. 1868.



Witnesses.
W. L. Carey
Geo. R. Hall

Inventor
G. E. King

Statement of the case.

either single or in two or more series or rows, composed of flattened borders, with flutes running along their inner edges, and puffed or crinkled surfaces between the flutes.

The invention consists in a guide constructed with one or more curved or arched portions, in combination with one or more suitable fluting-rollers, whereby the material, in passing through the machine, is fluted and contracted laterally, as it were, or drawn up between the flutes, to produce the required crinkled surface or surfaces in the puffing.

To enable others to understand the construction and operation of my invention, I will proceed to describe it with reference to the drawings.

A represents the frame which supports the working parts of the apparatus, and situated longitudinally in the upper part of which are two fluting-rollers, B and C, which are situated one above the other, with their ends projecting through the large vertical slots, *a*, formed in the ends of the frame A; the roller B being supported in semicircular bearings formed in the lower ends of the slot *a*, and furnished at one end with a crank, *b*, and the upper roller, C, working in semicircular bearings, *c*, formed in sliding blocks, *c*, placed upon the ends thereof, and pressed down upon the same by a spring, *d*, the tension of which may be regulated by means of a vertical screw, *e*, situated centrally in the top of the frame, A. When desired, the upper roller, C, may be held within a given distance of the lower roller by vertical set-screws, *f*, situated, one at each end of the top of the aforesaid frame, A, and acting upon the sliding or adjustable bearings, *c*. The puffing is represented in Fig. 4, and is formed of strips of any suitable fabric, and of a width, when finished, nearly or quite equal to the length of the fluting-rollers, B C, and is formed with longitudinal portions, *g*, which are fluted transversely to the length of the strip aforesaid; also with portions *h*, in which the fabric is pressed flat, and through which longitudinal rows of stitching are formed, to render permanent the conformation of the puffing; and also with portions *l*, which are intended

Statement of the case.

to be wider than the parts just described, and which are puffed or crinkled in such manner as to possess an irregular wavy surface. In order to form these several portions of the puffing, each of the fluting-rollers, B C, is formed with as many annular or circumferential series, A', of grooves and flutes as there are fluted portions, *g*, upon the puffing, with as many narrow annular faces, B', as there are flattened portions, *h*, and with as many comparatively broad portions, C', as there are puffed portions *i* in the finished puffing, each of the said parts of the rollers being of the same width as that portion of the completed puffing which it is designed to shape, and the circumferential faces or portions C' being of such diameter that, when the two rollers are in proper position, those upon one roller will be situated at such distance from those upon the other that no considerable pressure will be exerted upon the fabric in passing between them, and the several series A' of grooves and flutes upon one roller gearing into those upon the other roller. D indicates pressers, the rearmost end of each one of which is curved downward, and fitted upon the upper rearmost part of each of the faces B' of the lower roller B, with its forward end curved upward in contact with the forward sides of the corresponding face B' upon the other roller, as shown in Figs. 2 and 3, the aforesaid rearmost ends of these pressers D being pressed against the roller B by set screws, *j*, passing through a horizontal bar or brace, *k*, secured upon the rear of the frame A. Fixed upon the forward side of the frame A, in front of the roller B, is a horizontal supporting-brace, *m*, which has fixed upon it an inclined plate, *n*, upon which is supported the inclined guide E, which is composed of two pieces of sheet metal, secured one over the other, at such a distance apart as to permit the passage of the cloth or fabric between them; and those parts of this guide E in front of the plain cylindrical portions C' of the rollers are curved upward or arched transversely, as shown at *a'*, in such manner that the width of the fabric passed between each pair of the plain portions

Statement of the case.

C' will be greater, if stretched out to its full extent, than the width of the said portions, so that the said fabric, by means of its increased width, will be crinkled or puffed in passing between the aforesaid portions C', as will be presently fully set forth.

The end of the strip of cloth or fabric from which the fluted puffing is to be formed is passed into and through the guide E, and between the rollers B C, and a rotary motion in the direction of the arrow shown in Fig. 2 is communicated to the said rollers by turning the crank *b*, or by other suitable means. The fabric is drawn lengthwise between the rollers, those portions thereof which pass between the several opposite series A' of grooves and flutes of the two rollers being fluted, as shown at *g* in Fig. 4, while those portions of the said fabric which pass between the smooth narrow annular faces B' of the rollers, being formed into gathers by the fluting of the fabric at the sides or edges thereof, are pressed flat by passing under the pressers D, as the fabric is drawn along, at the same time that those portions of the fabric drawn through the curved or arched parts *a'* of the guide E, being, if stretched to their full extent, of a width greater than that of the smooth cylindrical portions C', and, being also gathered by the fluting formed at their sides or edges, are caused to assume a crinkled or puffed form as they are passed between the aforesaid portions C', the distance between the opposite smooth portions C' aforesaid being such that no pressure is exerted upon the fabric passing between them beyond that required to simply press the convex surfaces thereof downward to a sufficient degree to insure the shaping thereof into the puffed condition just herein described. The extent to which the material will be thus contracted laterally, as it were, or drawn up between the flutes, will be governed by the excess in length of the arched portions *a'* of the guide over a straight line or lines connecting such arched portions at their base.

By these means the fluted puffing is brought into the form required in the finished article without the necessity

Statement of the case.

of washing the same in order to bring the puffing into such form.

To complete the puffing, longitudinal rows of stitching are formed in the flat parts *h* of the puffing, to retain it in shape, and, when desired, the puffing as thus completed may be divided longitudinally in the said parts *h*, to separate it into narrow pieces, as required, for various trimming purposes.

What I claim as new, and desire to secure by Letters Patent, is—

The guide E, constructed with one or more curved or arched portions, *a'*, in combination with suitable fluting-rollers, substantially as herein set forth, for the purpose specified.

GEO. E. KING.

Witnesses :

A. LE CLERC,

E. P. TRACY.

ROBERT WERNER, OF HOBOKEN, NEW JERSEY.

IMPROVEMENT IN CRIMPING AND FLUTING MACHINES.

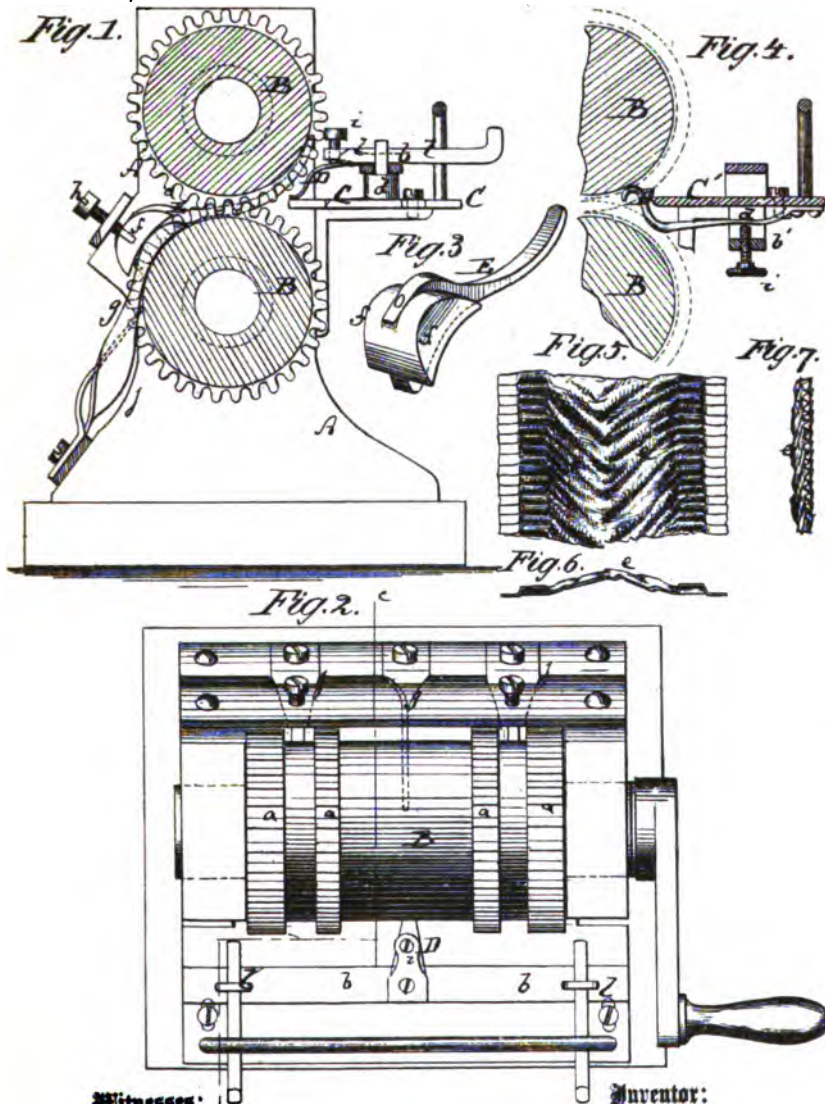
Specification forming part of Letters Patents No. 134,621, dated January 7, 1873.

To all whom it may concern :

Be it known that I, Robert Werner, of Hoboken, in the county of Hudson and State of New Jersey, have invented a new and Improved Combined Crimping and Fluting Machine, of which the following is a specification :

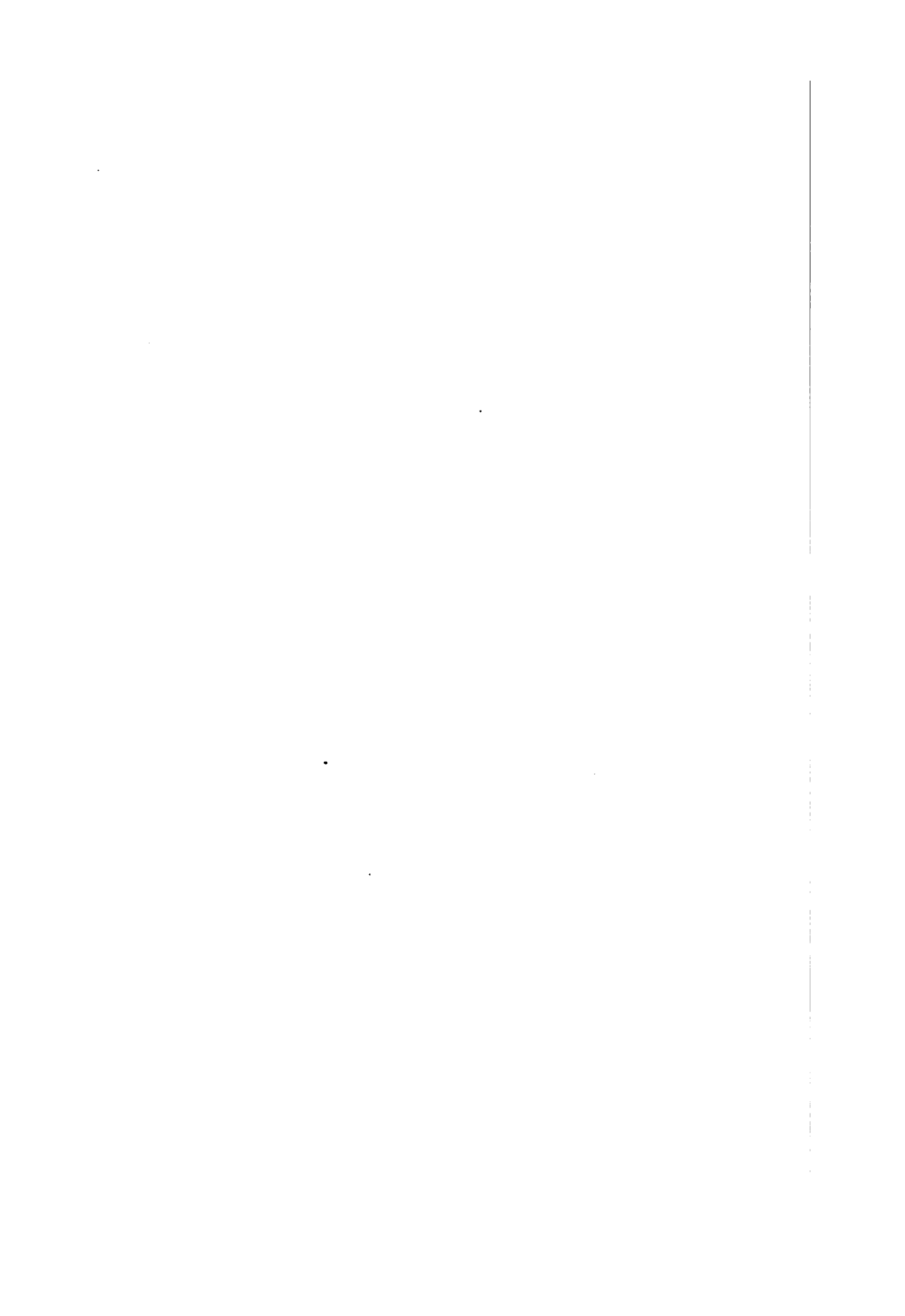
Fig. 1 represents a vertical transverse section of my improved crimping and fluting machine, the line *c c*, Fig. 2, indicating the plane of section. Fig. 2 is a plan or top view of the same. Fig. 3 is a perspective view of the device for holding the fluting against the rollers. Fig. 4 is a

R. WERNER.
Crimping and Fluting Machines.
 No. 134,621. Patented Jan. 7, 1873.



Witnesses:
John Becker
Edgewood

Inventor:
R. Werner
 per *Munn & Co*
 Attorneys.



Statement of the case.

vertical transverse section of a modification of my invention; Fig. 5, a face view of the crimping and fluting produced on the machine; Fig. 6, a transverse section; and Fig. 7, a longitudinal section of such fluting and crimping.

Similar letters of reference indicate corresponding parts.

This invention relates to a new machine for producing a fluted and crimped fabric, substantially like that for which a design patent was granted to me on the 29th day of November, 1870, from a smooth and flat woven fabric; and the invention consists, principally, in the application to fluting-rollers of a detent or finger by which a portion of the fabric is held back, and thereby formed into V-shaped, but more or less irregular, lateral waves or crinkles, whereby the stated and desired effect is produced. This finger is made to bear against a platform over which the fabric is passed to the fluting-rollers, or directly against one of the rollers, as may be desired. The invention also consists in a new arrangement and connection, with said fluting-rollers, of a device for holding the fluted fabric in contact with the same while the crinkled portion of the fabric is being elevated and puffed up by a projecting rib or stationary plate, all as hereinafter more fully described.

In the accompanying drawing, the letter A represents the frame of the machine. In the same are the bearings of two fluting-rollers, B B, which are parallel with each other, and, by preference, in a horizontal position, as indicated. The rollers B are provided with zones *a a* of fluting or toothed portions, which will cause certain strips of the fabric which pass between the said rollers to be fluted, while the remaining portions of the same fabric will not be fluted. C is a platform secured to the frame-work A in front of and about in line with the space between the two rollers. D is a detent or spring fastened to a bar, *b*, which rests, by posts *d*, upon the platform C. The free end of the spring D bears against said platform midway between the two inner zones or any pair of zones *a a* on said rollers. The fabric is passed over the platform C before it enters the

Statement of the case.

rollers, or rather in its passage to the said rollers, and is consequently passed under and subjected to the pressure of of the spring D, being fed or drawn forward by and between the rollers. That portion of the fabric which is subjected to the pressure of the spring D will be detained or held back or stretched back to be drawn into the V-shaped crinkles or crimping which is indicated in Fig. 5, at *e*. This effect, of course, can only be produced if the detent D bears upon the fabric previous to its being acted upon by the rollers, so that the portion affected by said spring can be drawn back by the detent in the manner shown. The same effect can be produced by the modified form of detent shown in Fig. 4, in which case the said detent is made to bear against one of the rollers B and fastened to the underside of a plate, C'. This modification can only be used when the detent bears against the rollers so far forward of the line that connects the two axes of the two rollers that sufficient material will be at the command of the detent to draw the fabric back into the V-shaped crimping; for, if the detent would apply to the middle of the roller when the fluting has already hold of the fabric, the drawing back could not be produced, inasmuch as the fluting would take up all the surplus fabric and none would be left for the effect by the detent. E E are metallic plates or bars provided with projecting cheeks *f*, which said cheeks bear against the fluted portions of the fabric as it emerges from between the two rollers, and hold said fluted portion in contact with the lower roller, while a projecting rib, *g*, moves the center of the crinkled portion from off said roller. This gives the transverse wave of the fabric which is indicated in Fig. 6. The plates or bars E E can, by set-screws *h h*, be adjusted nearer to or further away from the fluted portions of the rollers, for the purpose of holding the fluted portion of the fabric more or less firmly against the rollers, and for flattening portions of the fluting between the zones *a*. The rollers may be made hollow to be heated by steam or otherwise, so that the fabric which is passed between them, preferably in

Argument of counsel.

a moist state, may retain the form into which it is put by the action of the machine. It will be found convenient to raise the detent D off the platform C, (or withdraw it from contact with the roller B, when placed as in Fig. 4,) in order to enter the end of the fabric between the rollers. With this object, the bar *b* is made detachable and locked by keys *l l*, (or the plate C' made to be drawn back and forward.)

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The detent D arranged, in combination with the fluting-rollers B B, to produce the crinkles or puffing on the fabric which is partially fluted, as set forth.

2. The platform C or C' arranged, in combination with the detent D and rollers B, as specified.

3. The cheek-pieces *f* in the plates E, applied, in conjunction with the projecting rib *g*, to the fluting-rollers B B, as specified.

ROBERT WERNER.

Witnesses:

A. v. BRIESEN,
T. B. MOSHER.

Mr. A. v. Briesen, for appellant:

The Werner machine is not like the King machine and does not infringe upon King's patent nor is the Werner detent an equivalent of the King arched guide. "That two machines produce the same effect will not justify the assertion, that they are substantially the same, or that the devices used by one are therefore mere equivalents for those of the others." *Burr v. Duryee*, 1 Wall. 572 [7 Am. & Eng. 224]. "An infringement involves substantial identity." *Ibid.*

King cannot invoke the doctrine of equivalents to suppress all other improvements on machines for making puffing like the pipe puffing. *McCormick v. Talcott*, 20 How. 405 [6 Am. & Eng. 410], because he was not the first to produce that style of fabric.

Argument of counsel.

The Werner combination, being newly invented after the grant of the King patent, cannot possibly be covered by the King patent, for "a combination is not infringed unless by a machine containing all the material ingredients patented, or proper substitutes for one or more such ingredients *well known to be such at the time when the patent was granted.*" Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290]; Carver v. Hyde, 16 Pet. 514 [4 Am. & Eng. 367]; Vance v. Campbell, 1 Black, 427 [7 Am. & Eng. 117]; Roberts v. Harneden, 2 Cliff. 504; Mabie v. Haskell, 2 Cliff. 511; Brooks v. Fiske, 15 How. 219 [6 Am. & Eng. 15]; Stimpson v. Railroad, 10 How. 329 [5 Am. & Eng. 129]; Prouty v. Ruggles, 16 Pet. 341 [4 Am. & Eng. 351]; Barrett v. Hall, 1 Mas. 477; Howe v. Abbott, 2 Story, 194.

Messrs. Whitney and F. H. Betts, for appellee :

The only difference between King's and Werner's devices is that the resisting power in Werner's machine is concentrated at a single point and that by it he holds a portion of the material *back*, in the plane of motion, whereas in King's machine the resisting power is distributed over a curved surface, and by it he holds *up* a portion of the materials at right angles to the plane of motion.

It has been frequently held that the substitution of one direction of applying power for another is a mere mechanical change.

The proposition is entirely settled that where two machines act in substantially the same way, however different in form they may be, they are substantially alike. Bovill v. Moore, Dav. Pat. Cas. 402; Many v. Sizer, 1 Fish. 17; Sickles v. Borden, 3 Blatch. 535; Howe v. Williams, 2 Fish. 395; Blanchard v. Reeves, 1 Fish. 103; Winans v. Denmead, 15 How. 330 [6 Am. & Eng. 107.]

On the whole case, it is clear that the Circuit Court was entirely right when it decided that the defendant's machine infringed, and remarked upon the similarity of the devices for throwing in the fullness between the plain portions of

Opinion of the court.

the rollers, as follows: "The mode of operation is the same as in the plaintiff's machine, and the result is the same. The only difference is that in the one the center of the extra width moves *upward*, as the pull is made, and in the other it does not, but in each the detent instrument diverts the fabric from what would otherwise be its course, so as thereby to pull out the extra width. I think the variation is merely mechanical and not substantial, and that the defendant's machine is an infringement.

Mr. Justice MILLER delivered the opinion of the court:

There was issued to George E. King on the 26th February, 1867, letters patent for a new and useful improvement in fluting machines. This patent he surrendered, and on the 23d June, 1868, had two patents granted him as reissues of the original. The first of these, No. 3,000, was for the machine by which the article of fluting and puffing described in the patent was made; and the other, No. 3,001, was for the article made as described. The record before us is that of a suit in chancery brought by King against Robert Werner for an infringement of both these patents. Werner defended on the ground that the patents were void for want of novelty, and also by denying the infringement. The Circuit Court held that the defence was sustained as to the patent for the article produced, on the ground that it was not new, but rendered a decree in favor of plaintiff as to the reissued patent, No. 3,000, for the machine. The defendant Werner alone appeals, and seeks a reversal of the decree on both the grounds urged below.

We will examine the question of infringement first; for, if the appellant has not infringed the patent of the appellee, he can very well leave to others the task of contesting its validity.

The defendant is also patentee of a machine for crimping and fluting, which produces an article similar to that of plaintiff, and parts of the machine by which the purpose is

Opinion of the court.

effected are substantially the same as his. If on looking at the machine in detail there is such substantial identity as to all its parts, the appellant must be held to be an infringer, for his patent bears a date more than four years subsequent to that of plaintiff.

Appellee's schedule declares that his invention is designed for making puffing applicable to shirt bosoms, trimming, or other purposes of dress, in which the article, as it issues from the machine, is (without having recourse to laundering) delivered in a complete form, either singly, or in two or more series or rows, composed of flattened borders with flutes running along their inner edges and puffed or wrinkled surfaces between the flutes.

The fabric to be fluted and puffed is drawn between a pair of rollers moved by a crank, the rollers, where they approach each other, having flutes or grooves so arranged as by their pressure on the fabric as it passes between them to make the fluting and to flatten it. These grooves on the rollers, while they are continuous in the annular or circumferential direction of the rollers, are interrupted in their longitudinal direction by smooth spaces, so that the material passing between the rollers is fluted or crimped in parts of its width, and left plain in other parts which do not pass over the grooves. It is obvious, if this plain portion of the fabric, as it passes over the plain surface of the roller, can be so presented as to be compressed laterally, or in any other manner to have more of the material thus forced into the machine than is necessary to cover this plain surface, that when it comes out of the machine, while the fluted parts are fixed and flattened, the intermediate portion must present a puffed and irregular surface. It is this effect which is desired, and which King, by an additional contrivance, produces; and it is this contrivance, which, in combination with the fluting-rollers already described, but which are not new, he claims as his invention.

This part of the machine consists of a double-plated seg-

Opinion of the court.

ment of a hollow cylinder, the arch of which is upwards, so arranged with regard to the fluting-rollers that the part of the material which is intended to be puffed and not fluted, passing first between the plates of this arched guide, is presented to the plain surface of the roller, with the width of the strip increased by the difference between the lines of the curved or arched surface of the cylinder and the plain or horizontal surface of the roller which receives it. The result is, that when the material comes out of the machine this redundancy of the plain part of it assumes the form of irregular puffs, which is the end to be attained. All this is very well described, and specific references illustrated by drawings are given to the various parts of the machine.

“What I claim as new,” he says, in conclusion, “and desire to secure by letters patent, is: the guide E, constructed with one or more curved or arched portions *a*, in combination with suitable fluting-rollers, substantially as herein set forth for the purpose specified.

The schedule of Werner's patent, which is numbered 134,621, describes the same kind of fluting-rollers, and is designed to produce, while passing through them, what he calls a crinkled surface in that part of the fabric not fluted. But in his machine the redundancy of material is produced by passing it over a smooth, flat surface, from which it is presented to the fluting-rollers; and while so passing over this flat surface a detent, or finger is applied to that part of it not to be fluted, which, by reason of the pressure of a spring, holds back this part of the material. It is thus formed into V-shaped waves or crinkles, more or less irregular, whereby the desired effect is produced.

It will be observed that the main features of both machines are the same, and that whatever is new in either is ingrafted upon a fluting machine, many of which were patented long prior to both of them.

The question we are now to consider is, whether the flat surface and finger, or detent, of Werner are the mechanical

Opinion of the court.

equivalents of the double-plated segment of a cylinder used by King, within the principles of the patent law on that subject.

It is said that they are equivalents, because they produce the same result. The fact stated may be doubted; for an examination of numerous pieces of textile fabrics, passed through both machines, shows in those crimped by Werner's the regular V-shaped crinkle, with the acute angle pointing in the same direction with great uniformity; while in those passed through King's the puffs are elevated, wavy and irregular. But since the patent for the article is not contested here, this difference is of no other importance than as it illustrates the difference in the mode of operation of the two machines.

It is further said, that the difference is merely one of form; and cases are cited in which this court has held that a mere variation in the form or shape of the instrument cannot be successfully used to evade the monopoly. But where form is the essence of the invention, it is necessarily material; and, if the same object can be attained by a machine different in form where that form is inseparable from the successful operation of the instrument, there is no infringement. *Winans v. Denmead*, 15 How., 330 [6 Am. & Eng. 107]. In King's patent, the result sought is wholly due to the guiding arch, through which the fabric is carried. It is this semicircular form which gives the redundancy of material necessary to the puff; and no guide which did not in some manner give the materials an arched or curved shape as it passed into the fluting-rollers can be considered as a part of King's patent. It is not only necessary to an infringement that the arrangement which infringes should perform the same service, or produce the same effect, but, as Mr. Justice Nelson said in *Sickles v. Borden*, 3 Blatchf. 535, *it must be done in substantially the same way*. *Burr v. Duryee*, 1 Wall. 531 [7 Am. & Eng. 224].

The difference in the shape or form of the guide in these

Opinion of the court.

machines is not the only one. They operate on entirely different principles. King's instrument is, to some extent, automatic.

The strip of the fabric to be used, being once between the upper and under plates of this arched guide, cannot escape, and it must, in passing into the fluting-rollers, present the same amount of redundant material, whatever may be the elasticity or rigidity of the fabric. A piece of leather, would, if it passed through, present precisely the same elevation of the arch, and length of line of the semicircles, as a piece of gauze. Whereas, under the operation of the detent of Werner, the length of the lines and the acuteness of the angle of the ∇ would vary with the resisting strength of the fabric and the power of the spring which pressed the detaining finger.

Another marked difference is, that in King's machine the redundant fullness which makes the puff is produced by a pressure which is uniform over the surface of the fabric, the two plates giving it the exact form required, and no other; while Werner's finger seizes the fabric in the center of the part to be crinkled, and by pulling on it at this central point, as it is dragged in between the rollers, enough of the material is drawn in from the edges towards the center to create the redundancy necessary to the puff or crinkle. This is done by the material passing over a flat, smooth surface; and while on this flat plate the finger is applied to it, and detains or draws to this central point a portion of the fabric. There exists no such plate or flat surface or finger in King's machine. It seems impossible to hold that this flat surface, this pointed finger whose force is dependent on a spring, are the mechanical equivalents of the double-plated semi-cylinder of King's guide. If this be so, it is because King's patent covers every method which can be invented for presenting the material to the fluting-rollers in such a manner as to create a redundancy to be made into puffs. This is not

Notes and Citations.

claimed ; and, if claimed, the claim would be fatal to the patent.

We are of opinion that the machine of Werner, and its use by him, is no infringement of King's, and the decision of the Circuit Court is, therefore, reversed and the case remanded, with directions to dismiss the bill.

96 U. S. 231.

Notes :

2. Form the essence of the particular invention :

Carver v. Hyde, 16 Pet. 513 [4 Am. & Eng. 367].

Winans v. Denmead, 15 How. 330 [6 Am. & Eng. 107].

Washing Machine Co. v. Tool Co., 20 Wall. 342 [9 Am. & Eng. 305.]

Bridge Co. v. Phœnix Iron Co., 95 U. S. 274. [p. 364 ante.]

Clark v. Beecher Mfg. Co., 115 U. S. 79.

Patent in suit :

No. 62,492. King, G. E. February 26, 1867. Reissue No. 3,000. June 23, 1868. Fluting Machine.

OTHER SUITS ON SAME PATENT :

King v. Mandelbaum, 1871. 8 Blatch. 468 ; 4 Fish. 577.

King v. Werner, 1874. 12 Blatch. 270 ; 1 Ban. & Ard. 386 ; 8 O. G. 361.

Kersheedt v. Werner, 1875. 12 Blatch. 530 ; 2 Ban. & Ard. 81 ; 8 O. G. 146.

Notes and Citations.

Cited :

IN CIRCUIT COURTS IN:

McMurry v. Mallory, February, 1881. 4 Hughes, 265; 5 Fed. Rep. 593.

Peard v. Johnson, April, 1885. 23 Fed. Rep. 507; 32 O. G. 895.

IN TEXT-BOOKS :

2 Abb. Pat. Law, 1886. p. 245.

Walker on Pats., 1883. p. 255.

[illegible]

Syllabus.

EILERT SCHUMACHER AND WILLIAM JOHNSON,
APPELLANTS v. GEORGE B. CORNELL.*

96 (6 Otto) U. S. 549-556. Oct. Term, 1877.

[Bk. 24, L. ed. 676.]

Argued January 30, 1878. Decided February 11, 1878.

Particular patent construed. Infringement. Combination is an entirety. Patentee bound by his claim.

1. Reissued letters patent No. 5,026, G. B. Cornell, August 6, 1872 (original No. 118,617, August 29, 1871). Bung Bush and Wrench, *held* not infringed by the device made under letters patent No. 133,536, W. Johnson, December 3, 1872, Wrench, which is for a radically different invention. (p. 450.)
2. A combination is always an entirety. In such cases patentee cannot abandon a part and claim the rest, nor can he be permitted to prove that a part is useless and therefore immaterial. He must stand by his claim as he has made it. If more or less than the whole of his ingredients are used by another, such party is not liable as an infringer, because he has not used the invention or discovery patented. With the change of elements, the identity of the product disappears. (p. 453.)

[Citations in the opinion of the court:]

Vance v. Campbell, 1 Black, 427 [7 Am. & Eng. 117]. p. 453.

Appeal from the Circuit Court of the United States for the Eastern District of Wisconsin.

The case is stated by the court.

The following are copies of the drawings and of the specifications of the patents of the parties :

*See Explanation of Notes, page III.

Statement of the case.

WILLIAM JOHNSON, OF MILWAUKEE, WISCONSIN.

IMPROVEMENT IN WRENCHES.

Specification forming part of Letters Patent No. 133,536, dated December 3, 1872.

To all whom it may concern :

Be it known that I, William Johnson, of Milwaukee, in the county of Milwaukee, and in the State of Wisconsin, have invented certain Improvements in Wrench, of which the following is a specification :

Nature and Object of the Invention.

My invention is a wrench to screw bung-bushings into beer barrels, and fits into the opening and strikes against a projection on the bushing at the inner end of the bush, thus preserving the whole strength of the bushing. The notch on the outer side of the bushing, which weakens it, is avoided.

Description of the Drawing forming part of this Specification.

Fig. 1 is a sectional view of the wrench ; Fig. 2, a perspective view of the wrench and bushing.

General Description.

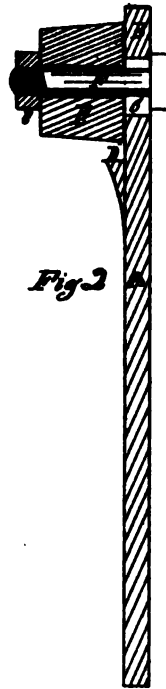
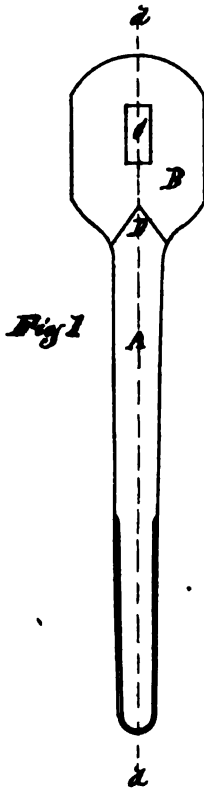
A is the handle of the wrench ; B, the projection which fits into the inside of the bushing ; C, a rod which runs down through the projection B in a hole nearer one side than the other ; D, a piece on the end of the rod C which fits into a recess in the bottom of B ; E, a knob on the top of rod C ; F, spring on rod C, under knob E, which holds the rod C up in place ; G, a screw in the top of rod C which holds knob E on securely in place ; H, the bush ; I, the projection on the bottom of the bushing which the part of the wrench D strikes against to screw the bushing into place.

J. LACEY & G. B. CORNELL.

Improvement in Wrenches for Extracting Bung-Bushes.

No. 5,026.

Reissued Aug. 6, 1872.



Witness
A. H. Sherburne
J. W. Merriam

Inventor
George B. Cornell
by Sherburne & Co
Attorneys

W. JOHNSON.

Wrench.

No. 133,536.

Patented Dec. 3, 1872.

Fig. 1.

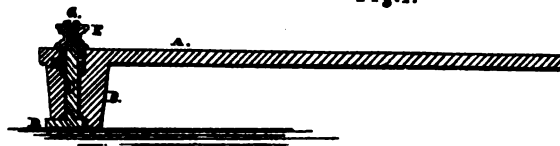
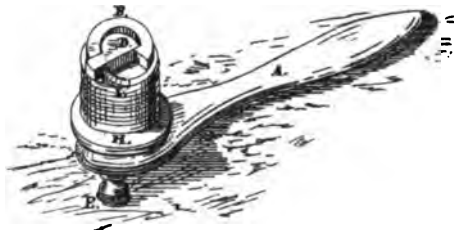


Fig. 2.



Witnesses:
J. B. Smith
E. J. Smith.

Inventor.
William Johnson

Argument of counsel.

The operation of this wrench is as follows: The part B is placed in the bush, and the operator then takes hold of the knob E and turns it, and as it turns the part D at the bottom is turned out and catches against the projection I, in the bushing, and then the handle A and the bush will turn with it and be screwed home.

Claim.

The combination and arrangement of projection B, rod C, piece D, and knob E, substantially as and for the purpose set forth.

WILLIAM JOHNSON.

Witnesses:

J. B. SMITH,

E. J. SMITH.

Messrs. William P. Lynde and A. Finch, for appellant:
There was no infringement.

Curtis Pats., sec. 249; Prouty v. Ruggles, 1 Story, 568; S. C. 16 Pet. 336 [4 Am. & Eng. 351]; Winans v. Schenectady and Troy Railroad Co., 2 Blatch. 279; Bell v. Daniels, 1 Fish. Pat. Cases, 372; Fuller v. Yentzer, 94 U. S. 288 [p. 138 ante]; Gill v. Wells, 22 Wall. 1 [9 Am. & Eng. 471]; Gould v. Rees, 15 Wall. 187 [9 Am. & Eng. 39]; Vance v. Campbell, 1 Black, 427 [7 Am. & Eng. 117].

There is no room in this case to invoke the doctrine of mechanical equivalents.

Seymour v. Osborne, 11 Wall. 516 [8 Am. & Eng. 290]; Gould v. Rees. *supra*; Gill v. Wells, *supra*.

Mr. L. L. Bond, for appellee:

Appellant's wrench is nearly a perfect copy of the patented one.

In Sewell v. Jones, 91 U. S. 183 [10 Am. & Eng. 336], this court held as follows: "To infringe a patent, it is not necessary that the thing patented should be adopted in every

Opinion of the court.

particular. If the patent is adopted substantially by the defendants, they are guilty of infringement."

Root v. Ball, 4 McLean, 177; *Alden v. Dewey*, 1 Story, 336; *Haworth v. Hardcastle*, Web. Pat. Cas. 484 [2 Am. & Eng. 19]; *Ransom v. Mayor of N. Y.*, 1 Fish. 252; *Whipple v. Middlesex Co.*, 4 Fish. 41; *Winans v. Denmead*, 15 How. 330 [6 Am. & Eng. 107].

Mr. Justice SWAYNE delivered the opinion of the court:

This is a suit in equity founded upon reissued patent No. 5,026. The reissue is for "an improved wrench for securing metallic bushing in casks and barrels," and bears date on the 6th of August, 1872. The appellee is the complainant.

The bill alleges infringement, and prays for an injunction and damages.

The answer denies the infringement, and sets up several other defences.

This opinion will be confined to the question of infringement.

The description of the appellee's wrench and his claim are thus set forth in the reissue.

"The present invention relates to a wrench employed in securing a metallic bung-bushing within the aperture of casks, barrels, etc.; and the improvement consists in providing the shank of the wrench with a cylindrical core so arranged as to closely fit the aperture in the bushing, and a V-shaped projection adapted to fit a corresponding notch formed in the bushing whereby the same may be turned into place without assuming oblique position within the bung-opening, and also preventing the wrench from slipping from its seat; all of which will be more fully understood by the following description:

In the drawing A represents the shank of the wrench, which consists of a plain metal bar of the requisite length. Attached to one end of this bar is a flat metal plate B, which is provided at its center with an elongated mortise C, as

Opinion of the court.

shown in Fig. 1. This shank is so formed at its junction with the plate as to provide a V-shaped projection, D, the point of which extends forward toward the center of the plate. E represents a cylindrical cast metal core, which is made tapering, and so arranged as to fit the aperture in the bushing. This core is made separate from the plate, and is attached thereto by means of a bolt, F, which passes through the mortise formed in the plate as shown in Fig. 2. The arrangement of this core is such as to admit of being removed from the bolt by removing the nut *e*, the object of which is to allow a core of greater diameter to be substituted when used in bushings of large size, provision being made for the elongation of the mortise in the plate for the moving of the bolt toward or from the projection D, which becomes necessary when cores of different sizes are used.

"In using the said invention, the core is inserted into the opening through the bushing, and turned until projection D falls into a notch formed in the bushing, which is adapted to fit the same; and by means of the core the bushing is kept steady, and prevented from assuming an oblique position in the bung-opening while being turned into place, and by the contact of the projection within the notch the wrench is prevented from slipping from its seat, thereby enabling the bushing to be readily turned into place.

"We do not wish to confine ourselves exclusively to the V-shaped projection, as any form that will prevent the core from turning independent of the bushing will produce the same result.

"Having thus described the said invention, we claim:—

"The wrench herein described, consisting of a shank A, plate B, projection D, and core E, the said core adapted to fit the opening through the bushing, whereby the same is prevented from assuming an oblique position when being turned into place, substantially as described."

The wrench of the appellants, out of which this controversy has grown, is also covered by a patent, but of later

Opinion of the court.

date than the appellee's. The specifications and claim of this patent are brief and clear. They are as follows:

“DESCRIPTION OF THE DRAWING FORMING PART OF THE SPECIFICATION.

“Fig. 1 is a sectional view of the wrench; Fig. 2, a perspective view of the wrench and bushing.

“GENERAL DESCRIPTION.

“A is the handle of the wrench; B the projection which fits into the inside of the bushing; C, a rod which runs downs through the projection B in a hole nearer one side than the other; D, a piece on the end of the rod C which fits into a recess in the bottom of B; E, a knob on the top of the rod C; F, spring on rod C, under knob E, which holds the rod C up in place; G, a screw in the top of rod C, which holds knob E on securely in place; H, the bush; I, the projection on the bottom of the bushing which the part of the wrench D strikes against to screw the bushing into place.

“The operation of this wrench is as follows: The part B is placed in the bush, and the operator then takes hold of the knob E and turns it, and as it turns, the part D at the bottom is turned out and catches against the projection I in the bushing, and then the handle A and the bush will turn with it and be screwed home.

“NATURE AND OBJECT OF THE INVENTION.

“My invention is a wrench to screw bung-bushings into beer barrels, and fits into the opening and strikes against a projection on the bushing at the inner end of the bush, thus preserving the whole strength of the bushing. The notch on the outer side of the bushing, which weakens it, is avoided.

“CLAIM.

“The combination and arrangement of projection B, rod C, piece D, and knob E, substantially as and for the purpose set forth.”

Opinion of the court.

Models of both instruments have come up with the record, and are in evidence. They are made in conformity to the respective specifications of the parties. The mind is much more effectually assisted in these cases by such aids than is possible by any drawings and description, however full, without them. We are thus enabled in this case readily to come to satisfactory conclusions.

Wrenches are very old. They have long been used for various purposes in the mechanic arts. Numerous cuts representing them in different forms are found in Knight's Mechanical Dictionary, pp. 1473, 1711, 2821.

The patent is well entitled *for an improvement*. It could be for nothing more.

Nothing is claimed separately. Everything is claimed together and in the aggregate. If anything was withdrawn, and no equivalent supplied in its place, the instrument would be a failure. Each element is a part of a compound unit, and is necessary to the completeness and efficacy of the result.

A combination is always an entirety. In such cases, the patentee cannot abandon a part and claim the rest, nor can he be permitted to prove that a part is useless, and therefore immaterial. He must stand by his claim as he has made it. If more or less than the whole of his ingredients are used by another, such party is not liable as an infringer, because he has not used the invention or discovery patented. With the change of the elements the identity of the product disappears. *Vance v. Campbell*, 1 Black, 427 [7 Am. & Eng. 117.]

But whether the patent here is for a combination or not is, in our view, not material. If the negative be conceded, we think the differences in the two instruments are so radical that the end of this litigation must be the same.

Upon examining the models and specification of the parties, it is found that the appellants have nothing in common with the appellees in several important particulars. They have not the flat plate B, nor the mortise C, nor the V-

Opinion of the court.

shaped projection D, nor the bolt F, as shown in Figure 2, nor any arrangement touching the core whereby it can be removed, and one of larger diameter be substituted, when the size of the cavity of the bush requires such a change; and there is no notch in the flange of the bush such as that to which the appellee's wrench is applied, and hence no projection to fit into such an indentation. Without both these things the appellee's wrench would be entirely useless. They are, therefore, vital in the invention covered by his patent. The notch is the point of engagement between the bushing and the wrench when the latter, operating as a lever, gives the former its circular motion, and thus forces it home. Without this arrangement such motion could not be communicated and the desired result produced. Hence its importance in the scheme of the invention. Without it the rest would be as worthless for the end in view as one blade of a pair of scissors disjoined from the other.

The appellants thought this notch arrangement seriously objectionable. They claimed that it weakened the flange of the bush, and that the application of the leverage necessary to give the bush the requisite circular motion until the work is done not unfrequently involved its destruction. They sought to obviate the difficulty by an invention of their own.

The first thing to be done was to change the bush so as to give it the desired strength. This could be effected only by dispensing with the notch. That was done.

Then it was indispensable that something should be substituted whereby the necessary turning motion could be given by the wrench to the bushing without injuring or destroying the latter. For this purpose a projection was put on the inside of the bush, low down. This strengthened rather than weakened it.

Bushes, like wrenches, are very old. They are not here in question. If they were, certainly the appellants had the same right to make them with the inner projection that the appellee had to make them with the outer notch.

Notes and Citations.

But, although the appellants' bush was unexceptionable, there was no wrench known in mechanics whereby it could be made to operate. The appellee's wrench was inapplicable. Projection D in his wrench, as regards such purpose, might as well have been anywhere else. It could have no possible relation of cause and effect to the thing to be done. The appellants entered the new and unoccupied field before them and succeeded. Their wrench has a projection or core attachment, which is inserted into the bush. Through this core runs a rod with a latch at the lower end, which fits into a recess at the bottom of the core. The core is introduced into the bush; the latch is turned by means of a knob at its top, so as to catch against the projection in the bush. The force of the wrench then being applied, the bush is readily screwed to its place. This was the last stage in the process of the invention.

The doctrine of mechanical equivalents has no application here, and need not be considered. The two instruments are separated by a broad line of demarcation. There is nothing in the appellee's which is suggestive of anything in the appellants'. No one from studying the former would have been thereby led to the results embodied in the latter. They are at opposite poles. Unless the appellee is entitled to claim every form of wrench applicable to bushes, invented after his own, his bill cannot be maintained.

The appellants seem to have considered his machine as a thing to be shunned, rather than to be followed. There is, certainly, not less of novelty, utility, and invention in their wrench, than in his. Whether his patent is or is not for a combination, the facts are alike fatal to this suit. There has been no infringement by the appellants.

The decree of the Circuit Court is reversed and the case will be remanded, with directions to dismiss the bill.

96 U. S. 556.

Notes:

2. A combination is an entirety:

Vance v. Campbell, 1 Black, 427 [7 Am. & Eng. 117].

Notes and Citations.

Gill v. Wells, 22 Wall. 1 [9 Am. & Eng. 471].
Corn-Planter Patent, 23 Wall. 181 [10 Am. & Eng. 1].
Bates v. Coe, 98 U. S. 31.
Imhaeuser v. Buerk, 101 U. S. 647.
Parks v. Booth, 102 U. S. 96.
Wicke v. Ostrum. 103 U. S. 461.

An element of a combination cannot be declared immaterial, and patentee is bound by his claim :

Vance v. Campbell, 1 Black. 427 [7 Am. & Eng. 117].
Water Meter Co. v. Desper, 101 U. S. 332.
Fay v. Cordesman, 109 U. S. 408, and see
Bridge Co. v. Iron Works, 95 U. S. 274, note [p. 364
ante].

Patent in suit:

No. 118,617. Cornell G. B. August 29, 1871. Reissues
Nos. 5,026 and 5,027. August 6, 1872. Bung Bush
and Wrench.

OTHER SUITS ON SAME PATENTS :

Cornell v. Littlejohn, 1876. 2 Ban. & Ard. 327; 9 O. G. 922.
Cornell v. Downer & Bemis Brewing Co., 1877. 7 Biss. 346; 2
Ban. & Ard. 514; 11 O. G. 331.

SCHUMACHER v. CORNELL.

457

Notes and Citations.

Cited :

IN CIRCUIT COURTS IN :

Hubbell v. United States, 20 Ct. of Claims 354.

[illegible]

Syllabus.

THE MILLIGAN AND HIGGINS GLUE COMPANY,
APPELLANT, v. GEORGE UPTON.*

97 (7 Otto) U. S. 3-7. Oct. Term, 1877.

[Bk 24, L. ed. 985.]

Affirming *Ibid*, 1 Ban. & Ard. 497.

Argued April 18, 22, 1878. Decided May 13, 1878.

*Particular patent construed. Article of manufacture. Invention.
Reduction in size. Commercial and patentable novelty.*

1. The claim of reissued letters patent No. 4,072, E. Goddard, July 12, 1870 (original No. 44,528, October 4, 1864), Glue, for "the comminuted glue hereinbefore described, as a new article of manufacture," *construed* to be an old article of commerce in a state of mechanical division greater than previously used, but unchanged in composition and properties; *held*, not to involve invention and wanting in novelty. (p. 473.)
2. Commercial and patentable novelty distinguished. (p. 476.)
3. Where certain properties are known to belong generally to classes of articles, there can be no invention in putting a new species of the class in a condition for the development of its properties similar to that in which other species of the same class have been placed for similar development; nor can the changed form of the article from its condition in bulk to small particles by breaking or other similar mechanical means make it a new article in the sense of the patent law. (p. 476.)

Appeal from the Circuit Court of the United States for the District of Massachusetts.

The case is stated by the court.

The specifications and drawings of Goddard's reissued letters patent are as follows:

*See Explanation of Notes, page III.

Statement of the case.

THOMAS P. MILLIGAN AND THOMAS HIGGINS, OF
BROOKLYN, NEW YORK, ASSIGNEES OF EMER-
SON GODDARD.

Letters Patent No. 44,528, dated October 4, 1864 ; Reissue No.
4,072, dated July 12, 1870.

IMPROVEMENT IN THE MANUFACTURE OF GLUE.

The schedule referred to in these Letters Patent and making part
of the same.

To all whom it may concern :

Be it known that I, Emerson Goddard, of the city, county,
and State of New York, have invented a new and useful ar-
ticle of manufacture, which I denominate Instantaneous or
Comminuted Glue ; and that the following is a clear, full,
and exact description of the same, and of the method of
producing it which I prefer, reference being had to the ac-
companying drawing, in which—

Fig. 1 represents a perspective section of a breaking-mill,
employed by me in the production of my new manufacture,
and

Fig. 2 represents a plan of portions of the breaking-rolls
thereof.

Fig. 3 represents a perspective section of the finishing-
mill employed by me, and

Fig. 4, a plan of portions of the finishing-rolls thereof.

Previous to my invention the glue of commerce has been
found in the market in the form of hard, angular flakes, and
a considerable time was consumed by artisans in the prepara-
tion of this glue of commerce for use in their various manu-
factures, first in soaking it in cold water, and afterwards in
heating the glue in a hot-water bath until the flakes were
dissolved. I have, by my invention, endeavored to save to
the artisan the time heretofore required in such preparation
by reducing the time required for the proper dissolving of glue
to less than five minutes, which process has formerly required

Statement of the case.

some hours to do it properly, and also to greatly diminish the chance of bad glue-joints from the use of imperfectly-dissolved glue, so likely to occur with hasty and impatient mechanics. Moreover, all the various articles of dry glue and gelatine heretofore in use are, in a great measure, unfitted for domestic use by reason of the long period of time consumed in their proper preparation for adhesive and for dietetic purposes. A great inconvenience has also been heretofore experienced by the merchant in the retailing of the ordinary glue of commerce from the great difficulty with which small packages can be made up, (and by hand only), by reason of the cutting of the wrapping by the sharp angular corners and edges of the broken flakes of glue, causing much waste of time and stock.

My invention or new manufacture consists of glue, comminuted to small particles of practically uniform size, as distinguished from the glue in angular flakes hitherto known. This new manufacture is free from all the above objections to common glue, as it does not require to be prepared for solution by soaking, is quickly permeated by water, so that it can be dissolved in large quantities, ready for mechanical use, in less than five minutes, and in small quantities, for domestic use, in less than one minute, and can be put up by machinery or by hand into packages of uniform size, and of regular form and weight, similar to those in which ground spices and other like articles are put up (or papered and boxed) for domestic use, and to be sold by retail merchants.

My invention is, moreover, superior to the glue of commerce, heretofore in use, in that it has an appearance more pleasing to the eye, and a comminuted glue of the same grade as a common glue has a whiter apparent color, and is therefore more merchantable, and will bring a higher price than the latter.

The best process which I have devised for making such instantaneous glue and the apparatus or machinery I use in the said manufacture, is as follows :

E. Goddard,
Manuf Glue.
No. 4072. Reissued. July. 12. 1870.

Fig. 1.

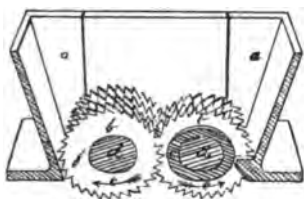


Fig. 2.

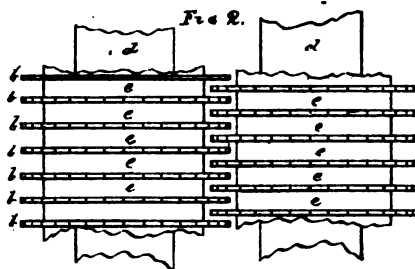


Fig. 3.

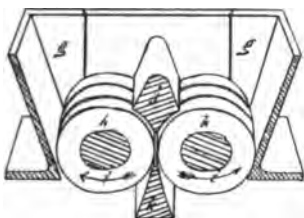
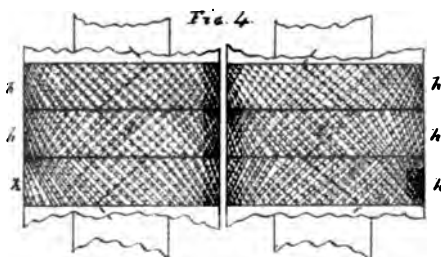


Fig. 4.



Witnesses
J. Frank
John Seagrave

Inventor
E. Goddard

Statement of the case.

Fig. 1 is a vertical perspective section, showing one-half of what I call a breaking-machine. It consists of a hopper, *a a*, into which is mounted two saw-toothed rolls, running in the direction indicated by the arrows *c c*, and being mounted in the frame of said hopper *a a*, in suitable bearings, and driven by power-pulleys, gears, or other suitable mechanism.

Fig. 2 is a plan of a section of these saw-toothed rolls, *b b* being rings of saw-teeth, *d* the axis on which they are mounted, *e e* blank rings between the saws, and about twice as thick as the rings of teeth, the saw of one roll running opposite the blank of the other roll alternately throughout.

f f are rows of pins on either side of the hopper *a a*, meshing in between the saws to prevent the contents of the hopper from falling out of the openings that would otherwise be formed by the space between the saws, and also to prevent the saws from fouling with any matter that might otherwise be retained between the saws during their revolution. Into the hopper of this machine I put the ordinary glue of commerce, and, by the rotation of the toothed-saw rolls, comminute the glue into small, quite uniform grains about half the size of barleycorns.

The coarse stock thus prepared I then subject to the action of a rasping or grating-machine, shown in the vertical perspective section at Fig. 3. This machine consists of a hopper, *g g*, in the lower part of which run the two rasping-rolls *h h*, in the direction indicated by the arrows *i i*, being impelled by appropriate mechanism. Above the rolls, and a little distance therefrom, is a stationary guide-bar, *j*, and the previously broken glue-stock being placed in the hopper, is, by rotation of the rasping-rolls, brought under the said guide-bar, to be acted upon by the teeth of the rasping-rolls. To retain this glue-stock under the guide-bar until it is fully worked, another bar, *k*, which I call a stop-bar, is placed beneath the rolls and between the same. The glue-stock is retained between the two bars until it is comminuted to the proper degree, when it passes off between

Statement of the case.

the stop-bar *k* and the rolls to a receptacle placed beneath the machine.

Fig. 4 shows a plan of a section of the rasping-rolls *h h*, with the position and form of the teeth or rasp surfaces, by which the comminuting is done. Each roll is divided into sections of about an inch in length. On the periphery in each section are rows of teeth, *l l*, about six or eight to the inch of length, and the rows about four to the inch of circumference. The rows run at an angle of about 45° with the axis of the rolls, and the teeth are cut at right angles with their rolls, or 45° with the axis of the rolls, in the opposite direction to the rows. Every other section of these rolls has its teeth cut to right or left, contrary to the adjoining sections, so as to give the full row of the teeth a zigzag position on the surface of the complete roll, said zigzag position being shown in Fig. 4.

The object sought to be attained in placing the rows of teeth at opposite angles is to mass the glue-stock in sections or small bodies, so as that it can be wholly comminuted without long-continued contact with the teeth at any given point, and to thereby avoid heating the glue, and also to keep all parts in a constant equalizing motion to supply the discharge, and to further prevent heating.

The object attained by placing the teeth *l l* at so great an angle is to cause the glue, as reduced, to slide off the teeth without adhering thereto, and consequently gumming up the machine, and also to enable the teeth to more thoroughly fracture all the particles of glue while in the act of taking them from the mass of glue-stock in the hopper.

When it is required to run the machines at a high rate of speed, the stock may be intermixed with a portion of rye-flour, starch, or any other substance which will, in a measure, prevent heat, and also serve to adulterate and cheapen the product without materially destroying the good qualities of the glue for the purpose of its intended use.

Having thus described my invention, and the mode of producing it which I have employed with success, I declare

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that I am aware that gelatine has been reduced to long, thin shreds, and therefore do not intend to include such shred-like material in my invention, which differs from it in being in the condition of loose particles or grains in place of long shreds. I do not also claim the mechanical means or process by which my new article of manufacture is produced, as it is obvious that other means and process of crushing or reduction may be used to manufacture my new articles out of common dry-flake glue or gelatine by a crushing or breaking operation; but

What I claim as my invention, and desire to secure by Letters Patent, is—

The comminuted glue hereinbefore described, as a new article of manufacture.

Witness my hand this 21st day of June, A. D. 1870.

E. GODDARD.

Witnesses :

J. S. GRANT,
JOHN GERAGHTY.

Following is the portion of the opinion of Mr. Justice CLIFFORD at the circuit, referred to in the opinion of this court :

Two principal suggestions are made, to show that the comminuted glue may be patentable as a new manufacture :

1. That the mass or particles are more soluble when wanted for practical use than the glue in flakes, as purchased in market, before the flakes are subjected to the patented process.

2. That the patented product may be more conveniently put up into small packages for domestic use and for the retail trade than the glue in flakes, and with less danger of loss.

Grant all that ; still the suggestions are not sufficient to show that comminuted glue is patentable as a new manufacture, as the properties of the glue in flakes are not im-

Statement of the case.

proved, and for the reason that the change effected by the described process does not involve the exercise of any invention or discovery. Refined sugar, when pulverized, is more readily soluble in water than when in the lump or loaf; and it is matter of common knowledge that small particles of any soluble substance are more readily dissolved in liquids than large lumps or loaves of the same substance. Like many other substances, glue, when comminuted into small particles, whether the operation is effected by breaking, pounding, rasping, grating, or grinding, is more readily soluble in water than when the attempt is made to dissolve it in flakes or other large bodies. Common experience is sufficient to verify that proposition, and the remark applies with equal truth and potency to many other articles, such as salts, refined sugar, gypsum, alum, camphor, gums of various kinds, and to many other substances in common use. Small particles present, comparatively, a larger portion of surface to the liquid into which they are put than more bulky ones, in consequence of which the substance, if permeable to liquids and soluble, will be more readily dissolved. Beyond doubt, comminuted glue is more readily soluble than glue in flakes; but the admission affords no support to the theory that comminuted glue is patentable, as the fact that small particles of soluble substances are more readily dissolved in liquids than larger ones is matter of common knowledge, and has been known for ages, whereof the memory of man runneth not to the contrary.

Here additional convenience in packing the comminuted article, as compared with the flake glue, proves nothing to support the theory of the complainants, as the fact has been matter of common knowledge for centuries. Much aid is derived in the investigation of the matters in controversy in the case, from the recent decisions of the Patent Office. Patents of the kind, it seems, were formerly granted without much consideration or scrutiny; but the recent decisions of the office afford evidence of a more thorough and rigid examination, and they appear to recognize fully the

Statement of the case.

well founded distinction between a new article of commerce and a new manufacture in the sense of the patent law; and appear to fully comprehend the rule that new articles of commerce are not patentable as new manufactures, unless it appears in the given case that the production of the new articles involved the exercise of invention or discovery beyond what was necessary to construct the apparatus for its manufacture or production.

Six years ago Commissioner Fisher adopted that rule in the well considered opinion which, it appears, the Patent Office for the most part has since followed.

Ex parte Ackerson, Com. Dec., 1869, p. 75.

Commissioner Leggett applied the same rule in *Ex parte* Chatillon, 2 Gaz. 115, in which he says that invention is an essential prerequisite to a patent; and it appears that he rejected the application in the case, upon the ground that the applicant had simply substituted one device for another, without overcoming any obstacle, or making any discovery, or manifesting any invention.

Acting Commissioner Thatcher also ruled in the same way in a case which came before him, and in the course of his opinion he censures the practice in granting patents in such cases, where there is no invention, and pronounces it a fraud upon the public, to be condemned in the strongest terms.

Bates v. Seeger, 2 Gaz. 493.

Views equally explicit, are expressed by Commissioner Leggett in a more recent case. *Jerome*, 3 Gaz. 64.

Great reliance was placed in that case by the applicant upon the words "new article of manufacture," as sufficient to show that the alleged improvement was patentable; but the Commissioner decided that those words will not have any such effect, and he accordingly rejected the application.

Repeated rulings to that effect have been made in the Patent Office within the last two or three years, of which the following are referred to as examples:

Ex parte Adams, 3 Gaz. 150, where it is pointedly stated that the same rule applies in determining the patentability

Statement of the case.

of an article of manufacture as in any other case, and that in such a case there must be evidence of novelty and of invention. Proof of novelty and of invention were also required in the case *Ex parte Wattles*, 3 Gaz. 291, and the applicants failing to produce such proofs, his application was refused.

Ex parte Leggett, 2 Gaz. 199; *Ex parte Baxter*, 2 Gaz. 470; *Ex parte Beach*, 3 Gaz. 607.

Circuit judges in this and other circuits have made similar decisions, as may be seen from the following brief summary:

Judge Shepley ruled expressly in the case of *Draper v. Hudson*, 3 Gaz. 354, that a patent for an article of manufacture cannot be sustained on the ground that it was fabricated by new and improved machinery; on the contrary, that the manufacture must be a new and improved thing in itself, possessing novelty of its own, independent of the devices, processes or arts by which it was produced. Precisely the same conclusion was reached by the judges of the Circuit Court for the Second Circuit, after full argument.

Sawyer v. Bixby, 1 Gaz. 165.

What the patentee claimed in that case was a new article of manufacture called a package or case which, when made with distributing holes and filled, was cemented with wax or by wafer. Infringement was admitted, but the respondent set up as a defence that the alleged invention was not, within the requirements of the patent law, an art, machine, manufacture, or composition of matter; and, therefore, that it was not a thing for which a patent could lawfully be granted, as at most the patentee had only devised means by which he could secure a larger sale of a given article without having changed the article itself, or given it any additional value; and the Circuit Judge sustained the defence, upon the ground that the production of the article did not involve the exercise of any invention.

Nothing short of invention or discovery will support a patent for a manufacture, any more than for an art, machine, or composition of matter, as is clearly illustrated in another

Statement of the case.

case decided in this circuit (*Merrill v. Yeomans*, 5 Off. Gaz. 267), where the Circuit Judge says that a patentee who has invented a process in the arts, whereby an article of manufacture is produced new in kind and not before known, may separately claim and patent both the art and the manufacture, if both are new and useful in the sense of the patent law; and it is doubtless true, if the thing be new in and of itself, it is patentable as a new manufacture, and that the patent would be infringed by the unlicensed construction or use of the part, although produced by other means than those described in the specifications of the patent. Inventions of the kind are rare, as it much more frequently happens that the process is inseparable from the product, so that the patentee cannot claim the product, if produced by hand tools, or by other means substantially different from those employed by the inventor or discoverer.

Patentees in the former case may claim the new product without qualification; but in the latter, they should claim the product, only when made by the described means or their equivalent, as the process inheres in the manufacture and constitutes an element of the invention. Neither claim, however, would be valid unless supported by proof of invention or discovery, for which proposition there is abundant authority in the decisions of the Supreme Court, and in the decisions of the English courts.

Hotchkiss v. Greenwood, 11 How. 265 [5 Am. & Eng. 240]; *Phillips v. Page*, 24 How. 167 [7 Am. & Eng. 97]; *Jones v. Morehead*, 1 Wall. 162 [7 Am. & Eng. 165]; *Stimpson v. Woodman*, 10 Wall. 121 [8 Am. & Eng. 221]; *Knight v. R. R. Co.*, Camp. (Taney, C. C.), 109; *Bean v. Smallwood*, 2 Story, 411; *Winans v. R. R. Co.*, 2 Story, 416; *Hicks v. Kelsey*, 18 Wall. 670 [9 Am. & Eng. 150]; *Paper Collar Co. v. Van Deusen*, 10 Blatchf. 119; *Langdon v. De Groot*, 1 Paine, 204; *LeRoy v. Tatham*, 14 How. 175 [5 Am. & Eng. 313].

Apply the principle of these cases to the case before the court, and it is clear that the patent cannot be sustained,

Statement of the case.

as neither the process nor the means of effecting the result, nor the apparatus or its modes of operation are new or different from what had long been known to those skilled in the art; nor does the operation of comminuting the glue in flakes have the slightest effect to change the properties of the substance in any respect whatever.

Comminuted glue differs in no respect from the ordinary glue of commerce, from which it is manufactured, except in the degree of its fragmentary condition, as appears by the great body of the evidence in the case. Other substances of various kinds, it must be conceded, have been mechanically reduced in size in like manner; and, inasmuch as such articles or some of them bear a close resemblance to glue in flakes, which is unchanged in any of its properties, I am of the opinion that the reduction of the glue, as manufactured in flakes, to small particles, as described in the specification of the complainant's patent, does not involve the exercise of invention or discovery, without which it is clear that the product of the described process or apparatus cannot be regarded as a patentable improvement. Abundant support to that proposition is found in the English decisions, as well as in the decisions made in this country.

Penn v. Bibby, L. R., 2 Ch. App. 136; *Harwood v. R. Co.*, 11 H. of L. Cas. 667; *Jordan v. Moore*, L. R., 1 C. P. 635; *Kay v. Marshall*, 8 Cl. & F. 261 [3 Am. & Eng. 299]; *Bush v. Fox*, 5 H. of L. Cas. 716; *Ralston v. Smith*, 11 H. of L. Cas. 255; *Tetley v. Easton*, 2 C. B. (N. S.) 740; *Horton v. Mabon*, 12 C. B. (N. S.) 452; *Ormson v. Clarke*, 13 C. B. (N. S.) 340; S. C. 14 C. B. (N. S.) 490; *Parkes v. Stevens*, L. R. 5 Ch. App. 39; S. C., L. R. 8 Eq., 368; *Envelope Co. v. Seymer*, 5 C. B. (N. S.) 173; *White v. Toma*, 17 L. T. (N. S.) 349; *Losh v. Hague*, Web. Pat. Cas. 208 [2 Am. & Eng. 477]; *Sanders v. Aston*, 3 B. & Ad. 885 [1 Am. & Eng. 466].

Support to the opposite view, it is supposed by the complainants, is drawn from the following cases:

Winans v. Denmead, 15 How. 343 [6 Am. & Eng. 107]; *Young v. Fernie*, 10 L. T. (N. S.) 864; *Salt Mfg. Co. v.*

Statement of the case.

Gugenheim, 3 Fish. 426; Davis v. Palmer, 2 Brock. 310; Le Roy v. Tatham, 14 How. 175 [5 Am. & Eng. 313]; S. C. 22 How. 137 [7 Am. & Eng. 29].

But the court is of the opinion that no one of these cases supports the theory of the complainants, as it satisfactorily appears in this case that flake glue, comminuted by other means than those described in the specification, is as readily dissolved and prepared for practical use as when the flake glue is comminuted by the patented process, and that the ground glue with equal convenience may be put up in small packages for the retail trade.

Proof of the most convincing character is exhibited in the record, showing that flake glue has been ground into small particles at a much earlier period of time than the date of the alleged invention, described in the original patent, and several parcels of the ground product, together with the machine in which the product was ground, were introduced in evidence, which show to a demonstration that, if glue comminuted by grinding is substantially the same product as glue comminuted by the apparatus described in the said specification, the patentee was not the original and first inventor of the patented improvement; but, in the view taken of the case, *it will* not be necessary to decide that issue in the pleadings, nor whether flake glue when ground is substantially the same as flake glue when comminuted by the apparatus described in the patent in suit, or substantially different, as will presently more fully appear, nor is it necessary to discuss either the third or the fourth proposition submitted by the respondents, as the court is of the opinion that the complainants fail to show that they are entitled to a decree for two reasons other than those submitted in those propositions:

1. Because the product of the process or apparatus described in the complainant's patent is not patentable, as the production of it did not, in the sense of the patent law, involve the exercise of any invention or discovery.

2. Because, if the patented product and the product man-

Argument of counsel.

ufactured by the respondent are substantially the same, then the original patentee was not the original and first inventor of the improvement, as flake glue was ground at a much earlier period than the date of the alleged invention; and if the patented product is substantially different from the product manufactured by the respondent, then it is clear that the charge of the infringement is not proven.

Messrs. Charles M. Reed, Walter Curtis, and Edmund Wetmore, for appellant:

As to the patentability of this article the complainant contends: First, that the comminution of the glue, as described in the patent, does not produce a *mere* change of form, but gives to the glue new and valuable properties and capacities for use, which entitle it to be considered as a new manufacture within the meaning of the patent law. Second,—that the article itself being new, it is immaterial whether the means of producing it are new or old.

It is to be borne in mind that the glue of commerce is practically different from the glue of the arts. Of the great practical value of the improvement the patentee has made there is no dispute. We confidently submit that he was entitled to a patent for this improvement in the process of reducing commercial glue to the liquid form. It is immaterial that this improvement consisted in part of the application of a well-known principle, viz.: that the solubility of a substance is increased by diminishing the size of its particles.

A general principle cannot be patented even by the first discoverer. It is the application of the principle only that can be patented, and the only question is whether that application of it is or is not known and useful.

Under our statutes, patents are allowed, not only for *inventions*, but for *discoveries*.

The improved quality of the article would have been deemed conclusive proof of the materiality of the change. Whenever the utility is proved to exist in any great degree,

Opinion of the court.

a sufficiency of the invention to support the patent must be presumed.

Web. on Sub. Mat. of Pats., p. 30; Curtis on Pats., Sections 9, 10; Smith v. Goodyear D. V. Co., 11 O. G. 246 [p. 1, *ante*].

Mere change of form in an article we admit is not patentable; but a change of form which results in giving to that article new and valuable qualities, or adapts it to new uses or new modes of use, embodies a new principle which is patentable.

Davis v. Palmer, 2 Brock. 310; Winans v. Denmead, 15 How. 339 [6 Am. & Eng. 107]; Dennis v. Eddy, 4 Fish. 427; Pearl v. Ocean Mills, 11 O. G. 714; Penn. Salt Co. v. Guenheim, 3 Fish. P. C. 423; Penn. Salt Co. v. Thomas, 5 Fish. P. C. 148.

Messrs. Chauncey Smith and George L. Roberts, for appellee:

The court declined to hear argument for appellee.

Mr. Justice FIELD delivered the opinion of the court:

This is a suit in equity for the alleged infringement of a patent owned by the complainant for an article of manufacture denominated "instantaneous or comminuted glue;" and to obtain a decree that the defendant account for and pay over to it the gains and profits acquired by him from the making and sale of the article, and be enjoined from further infringement. The court below dismissed the bill, and the complainant has appealed to this court.

The patent bears date in July, 1870, and was issued to the assignors of the complainant upon the surrender and cancellation of a patent issued in October, 1864, to Emerson Goddard, as the alleged inventor of the article in question, and afterwards transferred to them.

(a) In the court below, the defendant questioned the validity of that surrender and reissue; but, from the view we

97 U. S. 4.

(a) Otto begins opinion here.

Opinion of the court.

take of the alleged invention or discovery, it is unnecessary to consider this point. We shall treat the reissue as for the same invention or discovery, differing in no substantial particular from that originally patented. In the specification accompanying the reissue, the patentee states that he has invented a new and useful article, which he denominates "instantaneous or comminuted glue;" and then proceeds to describe the glue of commerce previously found in the market, and to point out the inconveniences attending its use, and the manner in which they are obviated by his invention. He states that the ordinary glue of commerce was then sold in the form of hard, angular flakes, and that it required a good deal of time to prepare it for use first by soaking it in cold water, and afterwards by heating it in a hot water bath until the flakes were dissolved. The time thus occupied, he says, is saved by his invention, as his article does not require to be prepared for solution by soaking, is quickly permeated by water, so that it can be dissolved in large quantities ready for mechanical use in less than five minutes, and in smaller quantities for domestic use in less than one minute. Another objection stated to the glue of commerce as previously sold is, that great inconvenience was experienced in retailing it, from the difficulty of putting it up in small packages, by reason of the sharp, angular corners and edges of the broken flakes, which cut the wrappers, causing a waste of time and stock. The new article, he says, can be put up by machinery or by hand into packages of uniform size and of regular form and weight, similar to those in which ground spices are put up for domestic use, and sold by retail traders. He also states that the new article has a more pleasing appearance than the ordinary glue of commerce, in that it has a white color, and is, consequently, more merchantable, and brings a higher price.

The specification then proceeds to describe the best process which the inventor has devised for making such instantaneous

Opinion of the court.

glue, and the apparatus or machinery he has used. These consist of a breaking machine, for crushing the flakes into small pieces, and of a rasping or grating machine, for comminuting the broken pieces into uniform grains. But for these mechanical means or processes the patentee makes no claim, observing, that it is obvious that other means or processes of crushing or reduction may be used to manufacture his article out of dry flake glue or gelatine by a crushing or breaking operation, and that his claim is only to the comminuted glue as a new article of manufacture.

It thus appears that the invention claimed is not any new combination of ingredients, creating a different product, or any new mechanical means by which a desirable change in the form of a common article of commerce is obtained; but it consist only of the ordinary flake glue reduced to small particles by mechanical division. The advantages from such division consist in its more ready and rapid solution, its greater convenience for packing and retailing, and its white appearance and enhanced salableness. The whole claim is to an old article of commerce in a state of mechanical division greater than previously used, but unchanged in composition and properties; and the benefits arising from the increased division are such as appertain to all soluble objects when divided into minute particles.

This statement, which is substantially a repetition in a condensed form of that by counsel, is supported by reference to numerous instances where similar results have followed the mechanical division of soluble objects into small particles; but we do not deem it necessary to mention them, for the point involved presents no difficulty. There is nothing new in the fact that the solution of a soluble object is accelerated by increasing its fragmentary division; nor is there anything new in the fact that articles with rough angles and edges can be more readily put up into packages without injury to their wrappers when reduced by mechanical division into small particles; nor is there anything new in

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the fact that such articles generally improve in appearance by granulation or powdering.

A distinction must be observed between a new article of commerce and a new article which, as such, is patentable. Any change in form from a previous condition may render the article new in commerce; as powdered sugar is a different article in commerce from loaf sugar, and ground coffee is a different article in commerce from coffee in the berry. But to render the article new in the sense of the patent law, it must be more or less efficacious, or possess new properties by a combination with other ingredients; not from a mere change of form produced by a mechanical division. It is only where one of these results follows that the product of the compound can be treated as the result of invention or discovery, and be regarded as a new and useful article. The three advantages attributed to comminuted glue over the flake glue were, previous to the alleged invention of Goddard, recognized as following from a division of soluble objects into small particles, in the treatment of a great variety of articles in constant use in the kitchens of families, and in pharmacy. Where certain properties are known to belong generally to classes of articles, there can be no invention in putting a new species of the class in a condition for the development of its properties similar to that in which other species of the same class have been placed for similar development; nor can the changed form of the article from its condition in bulk to small particles, by breaking or bruising or slicing or rasping or filing or grinding or sifting, or other similar mechanical means, make it a new article, in the sense of the patent law.

This subject is elaborately considered by the presiding Justice of the Circuit Court, in his opinion, with reference to numerous adjudications of the courts of England and the United States and in his conclusion on this point we concur.

Decree affirmed.

Oct., 1877.]

GLUE CO. *v.* UPTON.

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Notes and Citations.

Notes:

1. Change in *size held* not to involve invention in:

Phillips *v.* Page, 24 How. 161 [7 Am. & Eng. 97].

Dalton *v.* Jennings, 93 U. S. 271 [10 Am. & Eng. 459.]

Estey *v.* Burdett, 109 U. S. 633.

Pomace Holder Co. *v.* Ferguson, 119 U. S. 335.

Cited:

IN SUPREME COURT IN:

Mahn *v.* Harwood, 1884. 112 U. S. 354; Bk. 28 L. ed. 665.

IN CIRCUIT COURTS IN:

Pratt *v.* Rosenfield, June, 1880. 18 Blatch. 234; 5 Ban. & Ard. 488; 3 Fed. Rep. 335; 10 Reporter, 328.

Alcott *v.* Young, March, 1879. 16 Blatch. 134; 4 Ban. & Ard. 197; 16 O. G. 403; 7 Reporter, 552.

IN TEXT-BOOKS:

Merwin on Pat. Invt., 1883, pp. 21, 70, 227, 234, 268, 393.

Syllabus.

THE RUBBER-COATED HARNESS TRIMMING COMPANY ET AL., APPELLANTS, v. WILLIAM M. WELLING.*

97 (7 Otto) U. S. 7-12. Oct. Term, 1877.

[Bk 24, L. ed. 942; 13 O. G. 727.]

Reversing *Welling v. Rubber, etc. Co.*, 1 Ban. & Ard. 282.

Argued February 13, 1878. Decided March 25, 1878.

Particular patent construed. Invention. Aggregation.

1. Letters patent No. 37,941, granted William M. Welling, March 17, 1863, Martingale Ring, *construed* to be for a product, viz.: A martingale ring, consisting of a metal ring enveloped in a composition ring of artificial ivory or similar material. *Held* to be a case of aggregation and in view of the fact that the dies employed to complete the solidification and ornamentation of the ring form no essential part of the patented invention, and since metal rings enveloped in plastic compositions and the particular composition used by the patentee (artificial ivory) are both old in the art, the patent is void for lack of novelty and of invention. (p. 485.)

Appeal from the Circuit Court of the United States for the District of New Jersey.

The case is stated by the court.

The drawings of Welling's letters patent are added for a better understanding of the description given in the opinion of the court:

*See Explanation of Notes, page III.

Statement of the case.

WILLIAM M. WELLING, OF NEW YORK, ASSIGNOR
TO SAMUEL G. WELLING, OF NEW ROCHELLE,
N. Y.

IMPROVEMENT IN RINGS FOR MARTINGALES.

Specification forming part of Letters Patent No. 37,941, dated
March 17, 1863.

To all whom it may concern :

Be it known that I, William M. Welling, of the city and State of New York, have invented, made, and applied to use a certain new and useful improvement in Rings for Martingales, etc. ; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the annexed drawings, making part of this specification, wherein—

Fig. 1 is a plan of said ring with a portion represented as broken open, and Fig. 2 is a cross-section of the same.

Similar marks of reference denote the same parts.

In letters patent granted to me August 4, 1857, a composition and mode of making factitious ivory is set forth, and out of said materials I have manufactured billiard-balls, rings of various kinds, &c.

My present invention does not relate to any particular composition, as that in the aforesaid patent or any similar compound may be employed.

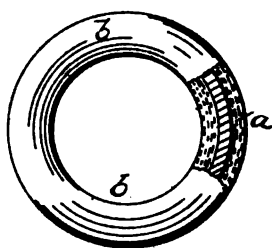
The nature of my said invention consists in the employment of a metallic ring within a ring formed of artificial ivory, or similar material, for giving strength to the same, thereby producing a new article of manufacture, and one that is stronger than an ivory ring and possesses all the beauty of appearance, and can be afforded at a very much less cost.

Ivory rings, particularly such as used for martingales, require to be made out of very solid ivory in order to be sufficiently strong, and hence are quite costly.

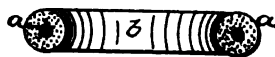
In order to make my improved rings, I take a ring of

W. M. Welling,
Harness Trimmings,
No 37,941, Patented Mar. 17, 1863.

Fig; 1.



Fig; 2



Witnesses;
E. Heiler

Thos. Geo. Harold

Inventor;
W. M. Welling

Argument of counsel.

metal, such as shown at *a*, or said ring may be formed by punching out a washer from a sheet of metal, or in any other suitable way. I take the amount of artificial ivory composition and by dies or by hand cause the said composition to completely envelope the said ring with as much uniformity as possible, as at *b*, and to give the exterior finish to the same, press and solidify the mass of composition around the ring by means of dies, and in so doing any plain or more or less ornamental shape may be given to the said ring or the surface thereof. My ring is thus made of the desired ornamental appearance, while great strength is attained at very little cost.

What I claim, and desire to secure by letters patent, is—

The ring for martingales, &c., manufactured as set forth, with a metal ring enveloped in composition, as and for the purposes specified.

As witness my signature this 28th day of April, 1862.

WM. M. WELLING.

Witnesses :

S. HILER,

THOS. GEO. HAROLD.

Messrs. J. C. Clayton and L. Q. Keasby, for appellants :

The court below erred in holding that the Welling invention is for a *combination*. The court below erred in holding that the claim of the patent "is not to be limited to the use of factitious ivory ; that it is broad enough to include the composition of rubber or gutta-percha."

All specifications of patents must be read in connection with the pre-existing state of the art. In this case, that state shows that metallic martingale rings had been covered or coated with compositions of many kinds, of lacquer, varnish, leather, china, enamel and rubber ; that factitious ivory had been known and stamped, in many shapes in dies ; and that dies had been used for finishing rubber rings. So that every individual element referred to in this patent—

Argument of counsel.

the factitious ivory, the iron ring, the process of coating, and the process of using the dies—were old and well-known at the time of the alleged invention ; and the patent shows on its face that the patentee was well informed on these points, for he does not claim any *composition*, any *process*, or any *die*—he claims only the “*ring*.”

In such a case as this, the doctrine of equivalents can be applied only within the most narrow limits.

The patent claims a “ring” whereas it should have claimed a “process ;” a complainant proves the use of a *process* by defendants. Even if the *process* were identical, a patent with a claim for the *result*—the “ring”—could not sustain a suit for the use of the “process.”

The patent is either for a “ring,” or for a “process.” If for a ring, defendants do not make the ring ; if for a process, they do not use the process, and it is not claimed.

Mr. Frederic H. Betts, for appellee :

No proof has been brought forward of any of the alleged prior knowledge or uses referred to, so evidence adduced is for several patents mentioned. No one of these describes a ring with metal core surrounded by a composition envelope which has the hardness, durability, and finish which results from the use of compressing dies in the manufacture.

The complainant's patent, after directing the use for a central ring of metal, and enveloping it in composition, claims “the ring for martingales, etc., *manufactured as set forth* ; with a metal ring enveloped in composition as and for the purposes specified.”

This is a claim for a composition-cased ring manufactured by, and having the qualities resulting from, *the use of dies*. No other construction gives effect to all of the words of the patent and none other is consistent with the rules of law for the interpretation of written instruments.

In his opinion in this case, Judge NIXON sustains this construction urged on the part of the complainant, he says, “his instrumentalities were already old—an iron ring, a

Opinion of the court.

plastic composition and a die ; but so far as appears in the case, they were *new in combination*. If his patent had been simply for a metallic ring, covered with any compound capable of being molded, or with factitious ivory, or similar materials, it would have been void for want of novelty. If it had been for the use of the die in compressing and solidifying *plastic substances generally*, it would have been probably anticipated in this regard by the English Letters Patent to Barnwell & Rollauson of 1860, in which such use of dies is plainly indicated, but the invention is for the *combination*, and the combination is a metal ring, surrounded with some plastic composition like artificial ivory of such a nature that it is capable of being compressed, solidified, and polished by the action of the dies, and which is in fact subjected to such action."

Among the plainest rules is that if two constructions be possible, one of which will render the instrument void and the other sustain it, the latter is to be adopted. Both the words of the patent and the rules of law prohibit therefore construction contended for by defendants.

Mr. Justice HUNT delivered the opinion of the court :

Wm. Welling brought his action in the Circuit Court against the plaintiff in error, alleging an infringement of his patent (a) for an improvement in rings for martingales, and recovered his damages. (b)

Welling's patent bears date of March 17, 1863, and recites that a previous patent to him described a particular mode of making factitious ivory, out of which billiard-balls and rings of various kinds were manufactured, and states that his present invention does not relate to that particular composition, but that "The nature of my said invention consists in the employment of a metallic ring within a ring formed of artificial ivory or similar materials, for giving

97 U. S. 7.

(a) Otto inserts " No. 37,941, bearing date March 17, 1863."

(b) Otto adds " The company thereupon appealed to this court."

Opinion of the court.

strength to the same, thereby producing a new article of manufacture."

His method of proceeding is as follows:

"In order to make my improved rings, I take a ring of metal, such as shown at *a*, or said ring may be formed by punching out a washer from a sheet of metal, or in any other suitable way. I take the amount of artificial ivory composition and by dies or by hand cause the said composition to completely envelop the said ring with as much uniformity as possible, as at *b*, and, to give the exterior finish the same, press and solidify the mass of composition around the ring by means of dies, and in so doing any plain or more or less ornamental shape may be given to the said ring, or the surface thereof. My ring is thus made of the desired ornamental appearance, while great strength is attained at very little cost."

His claim is in these words:

"What I claim and desire to secure by letters patent is the ring for martingales, etc., manufactured as set forth, with a metal ring enveloped in composition, as and for the purposes specified."

In ascertaining the construction to be put upon this patent, the state of the art is a legitimate and necessary subject of consideration.

1. The fact that metallic rings covered with a composition such as lacquer or varnish, rubber, enamel or glass, had been in use for many years before *plaintiff's* invention, is clearly proved, and is conceded in the briefs on both sides. In most instances, these coverings were applied and secured, first by the hand of the operator and then by machinery.

2. It is proved by witnesses and shown by the patents hereafter referred to, that prior to the plaintiff's invention dies were also made use of in the manufacture of pipes or rings upon iron cores. Mr. Elliot, an expert witness, says (*c*), "Is it a part of your knowledge of the state of the art of

97 U. S. S.

(*c*) Otto inserts "in reply to the question."

Opinion of the court.

manufacturing articles of composition or plastic materials, that pipes of lead composition have been formed upon iron cores by pressure in dies?" *Ans.*: "It is." Again he says: "Do you mean to say, in the manufacture of rings, that dies were well known prior to the invention in suit?" *Ans.*: "I believe rings were formed in dies prior to that time, but without metal cores."

Mr. Hedrick says: "It was not new two years before the date of Welling's application to make a martingale ring by covering a metallic ring with a shell of plastic material which could be molded or pressed thereupon and afterwards hardened."

The English patent issued to Moses Poole, dated October 1st, 1852, and of which the specification is dated March 30, 1853, was referred to by a witness, but was not given in evidence. We therefore pass it without comment.

The English patent of 1851, to Newton, referred to in the testimony, recites:

"When it is desired that the compound of caoutchouc or gutta-percha shall serve as a covering to the iron or other substances, a thin sheet of the compound, sometimes one thirty-second part of an inch in thickness, or less, is pressed with great care upon the iron or other substance, so as to expel all air from between the adjoining surface, and to cause the most perfect union and adhesion; the coated article is bound with strips or ribbons of cloth, or other suitable material, whereby the compound is kept in close contact with the article during the process of hardening. The combined materials thus treated will be found to possess the qualities desired, the iron or other substance giving strength, and the compound giving a hard and durable surface. In this way may be produced many articles used in and about harness or carriages, such as saddle-trees, buckles, terrets, bits, stirrups, martingale rings, dasher irons, and articles intended to be used as furniture," etc.

"Another plan consists in so treating the compositions

Opinion of the court.

while in a plastic state that they will harden into any desired shape. * * * For this purpose, the compounds of caoutchouc or gutta-percha, before described, are taken in the plastic state, and cut or pressed or otherwise formed into the exact shapes which it is desired they shall retain after vulcanization."

In the English patent to Edward Benton, of 1843, the rings, terrets and other parts are covered with an enamel or vitreous composition, of which the composition and the manner of applying to the ring is described; and in speaking of these linings it is said, "The said linings are formed in molds by processes well understood," etc.

Similar language is used in the English patent to Barnwell & Rollauson, dated 1860: "We make, toys, etc., by employing molds or dies of any suitable material for which our composition has no affinity, or to which it will not adhere."

A die is a piece of metal on which is cut a device which, by pressure, is to be placed upon some softer body. A mold is a receptacle into which a softer material is injected, to take its shape when hardened. Both dies and molds are there spoken of; and it thus appears that not only were there well known and in extensive use, before Welling's patent, iron rings, tubes, pipes, toys and other articles of manufacture, enveloped in and surrounded by glass, enamel, rubber and other like substances, but these coverings had been applied and ornamented by means of molds or dies.

As we read Welling's patent of 1863, it is for a product, and not for a process.

In 1857 he obtained a patent (*d*) for the manufacture of artificial ivory. He gives the proportions of white shellac, of impalpable white, of ivory dust and camphor, which are to be heated, thoroughly incorporated and brought into heated molds for the manufacture of various articles. His *claim* in that patent is for forming artificial ivory, by thor-

97 U. S. 9-10.

(*d*) Otto substitutes for a "patent" "letters patent No. 17,999."

Opinion of the court.

oughly mixing the articles specified, or others having equivalent properties, while under the operation of heat, substantially as specified. (No. 17,999) (*e*). The patent was for a product resulting from the materials and proportions described, to wit: factitious ivory.

Having the advantages of his manufactured ivory strongly impressed upon his mind, he makes, in 1863, a more specific application of this invention of ivory to the production of martingale rings.

He says in his description, "I have invented and applied to use a certain new and useful improvement in rings for martingales." He does not here claim to have invented a substance or material or composition; he claims no benefit of any process to reach his result, but claims a ring only. He claims a product; and all else is a description of the mode of obtaining that product, which would enable a skilled mechanic to make the article, and which the law requires him to set forth in his patent. Of this character is the statement that the composition envelopes the ring by means of dies or the hand, and that an exterior finish and ornament is produced by solidifying by the means of dies.

Again, he says: "The nature of my invention consists in the employment of a metallic ring within a ring formed of artificial ivory, or similar materials for giving strength to the same, thereby producing a new article of manufacture," etc.

A metallic ring within the ring of factitious ivory is the article to be produced, and that is the "nature of the invention."

Nothing can be more specific than the summing up as to the nature of his invention by the patentee, when he says, "What I claim and desire to secure by letters patent is the ring for martingales, manufactured as set forth, with a metal ring enveloped in composition, as and for the purposes specified." A metal ring enveloped in composition would seem to be the plain subject of the monopoly, the other language

97 U. S. 10-11.

(*e*) Otto omits "No. 17,999."

Opinion of the court.

being merely illustrative of, or supplemental to, the main idea.

What, then, is the product thus secured by his patent?

The plaintiff, (f) Welling, gives this construction to his patent: "I claim (under my patent) all compositions for covering martingale rings or rings for harness." "Do you claim that all metallic harness rings covered with composition of any kind are subject to your patent?" "I do most certainly."

If this is the true construction of the patent, it cannot be sustained, under the evidence showing the use of covering of harness rings by various compositions, and patents providing for such use, prior to Welling's patent.

Another construction claims that the patent covers a ring having an iron core covered with a plastic composition, if and provided the article is finished by dies. This is the view of the plaintiff's expert witness, Mr. Elliot, who states expressly that, if made without the use of dies, he does not consider the article within the patent.

Nearly allied to this idea, if not identical with it, is that of the judge who tried this case at the circuit. He says of Welling's patent: "His instrumentalities were all old:—an iron ring, a plastic composition, and a die; but, so far as appears in the case, they were new in combination. If his patent had been simply for a metallic ring, covered with any compound capable of being molded, or with factitious ivory or similar materials, it would have been void for want of novelty. If it had been for the use of the die in pressing and solidifying plastic substances generally, it would have been probably anticipated in this regard by the English letters patent to Barnwell & Rollauson of 1860, in which such use of dies is plainly indicated. But the invention is for a combination; and the combination is a metal ring surrounded with some plastic composition, like artificial ivory, of such a nature that it is capable of being compressed, so-

97 U. S. 11-12.

(f) Otto omits "The plaintiff."

Notes and Citations.

lidified and polished by the action of the dies, and which is in fact subjected to such action, whereby a martingale ring is produced with an exterior surface more durable and more highly polished than had before been obtained by different processes of manufacture, and at greater cost."

We think the evidence shows that this combination, if it is entitled to that rank in mechanics, as well as the ring and the compound, is old. There is, in truth, no combined action. The iron core is used as a basis; the covering is of a pliable composition, and it is pressed or stamped by dies or molds. All this is done separately, by no combined action. This is just as much, and nothing more, than is described by the witnesses, and by the patents prior to Welling's. It is simply the application and the action of old and well-known modes and materials in an accustomed manner. It is a case of aggregation, not of combination.

Can the plaintiff recover in this action upon a patent for this product, to wit: a metal ring enveloped in a composition of artificial ivory or a similar material?

It is evident, from what has already been said, that a patent for the manufacture of a metal ring enveloped in a composition of ivory or similar material is void for the want of novelty.

Such is the testimony of the expert witnesses on both sides, as well as the inevitable result from an examination of the English patents heretofore referred to. Indeed, we do not understand the counsel as contending that the patent can be sustained if this is held to be its construction.

Upon the whole case, we are of the opinion that the decree must be reversed and the case remitted to the Circuit Court, with directions to enter a decree dismissing the bill of complaint, with costs.

97 U. S. 12.

Notes:

1. Aggregation:

Hailes v. Van Wormer, 20 Wall. 353 [9 Am. & Eng. 340].

Notes and Citations.

Reckendorfer *v.* Faber, 92 U. S. 347 [10 Am. & Eng. 373.]

Pickering *v.* McCullough, 104 U. S. 310.

Packing Co. Cases, 105 U. S. 566.

Double Pointed Tack Co. *v.* Two Rivers Mnfg. Co., 109 U. S. 117.

Bussey *v.* Excelsior Mnfg. Co., 110 U. S. 131.

Stephenson *v.* Railroad, 114 U. S. 149.

Beecher *v.* Atwater Mnfg. Co., 114 U. S. 523.

Thatcher Heating Co. *v.* Burtis, 121 U. S. 286.

Mosler Safe, etc. Co. *v.* Mosler, Bahmann & Co., 127 U. S. 354.

Hendy *v.* Golden State and Miners' Iron Works, 127 U. S. 370.

Patent in suit:

No. 37,941. Welling, W. M. March 17, 1863. Martin-gale Ring.

OTHER SUITS ON SAME PATENT :

Welling *v.* Rubber, etc. Co., 1874. 1 Ban. & Ard. 282; 7 O. G. 606.

Welling *v.* Rubber, etc. Co., 1875. 2 Ban. & Ard. 1; 7 O. G. 608.

Cited:

IN CIRCUIT COURTS IN:

Welling *v.* Rubber-Coated Harness Trimming Co, February, 1875. 2 Ban. & Ard. 1; 7 O. G. 608.

Notes and Citations.

IN TEXT-BOOKS:

2 Abb. Pat. Law, 1886, p. 304.

Merwin on Pat. Invt., 1883, p. 457.

Syllabus.

**THE UNION PAPER BAG MACHINE COMPANY AND
SAMUEL CUPPLES, APPELLANTS, v. MERRICK
MURPHY ET AL.***

97 (7 Otto) U. S. 120-126 Oct. Term, 1877.

[Bk. 24, L. ed. 935 ; 13 O. G. 366.]

Argued February 15, 1878. Decided February 25, 1878. .

*Particular patent construed. Infringement. Substantial identity.
Equivalent.*

1. Claim 1 of letters patent No. 24,734, William Goodale, July 12, 1859. Paper Bag Machine, for a weighted knife with five planes or faces, which descends by gravity upon a flat continuous paper web and severs a peculiar outline-blank that folds into a bag without further cutting, *held* infringed by a stationary serrated-edged knife of substantially the same form fixed to the machine bed, and which cuts the same shaped blank from the web passing above by conjoint action with a quick descending striker that gives the paper a vertical blow, directly in advance of the edge of the knife, the knife and the striker operating together to perform the same function as that performed by the complainant's machine by the ascent and descent of the cutter. (p. 505.)
2. Except where form is of the essence of an invention it has but little weight in determining the question of infringement. It is necessary to look at the mode of operation and at the result, as well as at the means by which the result is attained. (p. 510.)
3. One device is substantially the same as another if it performs substantially the same functions in substantially the same way to produce the same result, and this though they differ in name, form, or shape. (p. 510.)
4. The substantial equivalent of a thing is the same as the thing itself. (p. 510.)

[Citations in the opinion of the court].

Cahoon v. Ring, 1 Cliff. 592. p. 510.

Curtis Pat. (4th Ed.) § 310. p. 510.

*See Explanation of Notes, page III.

Statement of the case.

Appeal from the Circuit Court of the United States for the Eastern District of Missouri.

The case is stated by the court.

The following are the specifications and drawings of the Goodale letters patent :

WM. GOODALE, OF CLINTON, MASSACHUSETTS.

Letters Patent No. 24,734. Dated July 12, 1859.

IMPROVEMENT IN MACHINE FOR MAKING PAPER BAGS.

The schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, William Goodale, of Clinton, in the county of Worcester and State of Massachusetts, have invented certain new and useful improvements in machinery for making Paper Bags, and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which,—

Fig. 1, is a central longitudinal section of a machine with my improvement.

Fig. 2, is a plan of the same.

Fig. 3, is a transverse vertical section of the same, in the line x x, of Fig. 1.

Fig. 4, exhibits the shape of the paper blank of which the the bags are formed by the machine, before it is folded.

Fig. 5, exhibits the bag folded.

Similar letters of reference indicate corresponding parts in the several figures.

My invention consists firstly, in making the cutter which cuts the paper from the roll or piece, of the peculiar irregular form hereinafter described, whereby it is caused by the

Statement of the case.

operation by which it cuts the paper from the roll or piece, to give it the form hereinafter specified which permits it without further cutting out to be folded into a bag.

It also consists in the attachment of the former round which the paper is folded to form the bags to the cutter which cuts it from the roll or piece.

It also consists in a certain mode of applying and arranging a paster in combination with the former attached to the cutter, for the purpose of pasting the lap which closes the bottom of the bag.

It also consists in a certain construction of two side lappers operating in combination with the former to fold the bag, whereby the bottom lap is partly folded by the act of folding the side laps.

It also consists in a contrivance applied and operating as hereinafter described to start the folded or partly folded bag from the former.

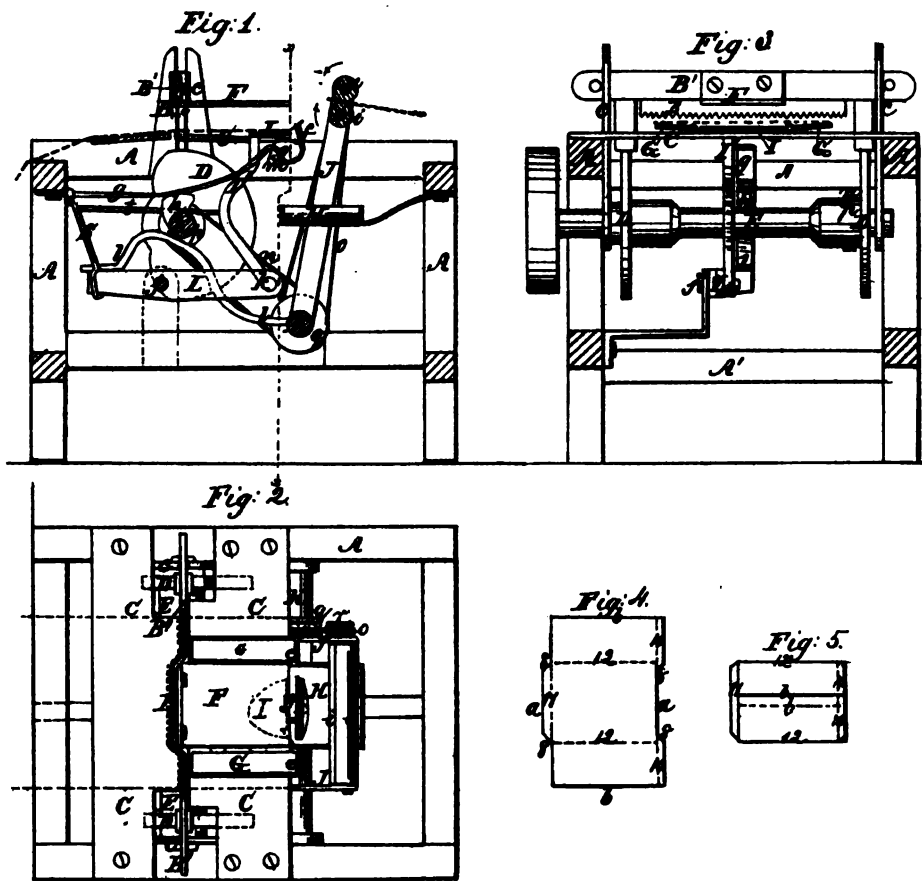
It also consists in a pair of rollers arranged in a vibrating frame and operating as hereinafter described to remove the bag from the former, close the laps, and discharge the bag, from the machine.

And it further consists in the general arrangement and combination of the several parts of the machinery to operate substantially as hereinafter described.

To enable others to make and use my invention I will proceed to describe its construction and operation.

A is a square framing which supports all the working parts of the machine. B, is the cutter which cuts the paper from the roll or piece to the required form for the bags, which is exhibited in Fig. 4, said cutter cutting directly across the roller or piece, and producing the edges *a, a*, of the blank. The edges *b, b*, are not cut at all as the blank, between those edges is the full width of the paper. Before proceeding further with the description of the machine it will be well to explain how the bag is produced from this blank represented. The cutting of the edges *a, a*, with two jogs 8, 8, provides a lap 10, 10 to close the bottom, and

W. Goodale.
Mach. for Making Paper Bags.
N^o 24734. Patented Jul. 12. 1859.



Witnesses;
Ben. Sawyer
A. C. Goodale

Inventor;
William Goodale

Statement of the case.

one 11; to cover the mouth of the bag, when the blank has been folded in the dotted line 12, 12. These lines, 12, are so situated that the edges *b*, *b*, will lap each other, as shown in Fig. 5, to form a seam down the middle of one side of the bag. The two parts 10, combine to form a lap for the bottom when the blank has been folded in the lines 12, 12, and this lap is to be folded in the opposite direction to the fold in the lines 12, 12, that is to say if the side parts outside the lines 12, 12, are folded over on the top of the central portion the parts 10, are to be folded under the central portion, as illustrated in Fig. 5. The cutter B, is of the form of the edges *a*, *a*, shown in Fig. 4, as may be seen by reference to Fig. 2, where its back is represented. This cutter has a serrated edge which works through a narrow slot *d*, of corresponding form in a table C, upon which the paper is deposited in proper lengths for the blanks, from a roll or direct from a paper-making machine, by suitable intermittently operating feed rollers, which I have not thought it necessary to represent as such rollers are used in most paper bag machines, the front edge of the said table C, being also like the cutter, of the form of the edges *a*, *a*. The cutter is attached to a horizontal bar B', which works within vertical guides *c*, *c*, erected on opposite sides of the machine, and which derives an upward vertical movement from two cams D, D, on a constantly rotating horizontal main shaft E, and then descends by its own weight which is sufficient to cause the cutting of the paper by the cutter, the descent taking place during the intermissions between the feeding movements of the paper.

F, is the former consisting of a plate of metal of a width and length equal to the desired width and length of the bag, secured to the cutter bar B', so as to rise and fall with the cutter, said plate occupying a horizontal position and coming down close upon the table C, at the back of the cutter as the cutter completes its descent, and cuts off a blank from the piece or roll of paper, the side edges of the said former coming on the lines 12, 12, of the blank. The cutter

Statement of the case.

and former remain stationary after their descent long enough to permit the operation of the side lappers G, G, which are hinged to the table C, one on each side of the former, and which are thrown quickly over the former to fold over the side portions of the blanks from the lines 12, 12, and as quickly thrown back again to permit the rising of the cutter and former, one of the said lappers operating slightly, in advance of the other, to permit one edge *b*, of the blank to be lapped over the other without any danger of their meeting. I have not represented in the drawing any mechanism for operating these lappers, as they may be operated in the same manner as the lappers in other paper bag and envelope-making machines. The said lappers, however, differ in their construction from lappers in other machines in one particular, viz: in having the ends which are next the extremity of the former bent at a right angle or nearly so, as shown at *e*, *e*, in Fig. 2, so that as they fold the sides of the blank, they will also partly fold the bottom lap, that is to say, will turn it down at right angles to the body of the bag. The parts, *e*, *e*, of the lappers may be attached to the other parts by hinge joints, and be operated so as to complete the folding of the bottom lap.

It might have been before observed that as the paper for the blank is fed onto the table C, it is pasted along one edge *b*, by passing over a paste roller which I have not represented as it constitutes no part of my invention, and hence the lap of the two edges, *b*, *b*, is caused to adhere to form the seam when the sides of the blank are folded over by the lappers. The bottom lap is pasted by means of a paster, *f*, which is attached by a spring arm, *g*, to the upper front rail of the frame. This paster is forced by the elasticity of the spring arm, *g*, down into a paste box, H, suitably arranged below the table, C, but at the proper time, viz: after the operation of the side lappers, F, F, is raised to apply the paste to the overhanging lap, 10, 10, of the partly folded blank on the former, by the action upon the arm, *g*, of a cam, *h*, on the main shaft, E.

Statement of the case.

I, is what I call the knock-off for starting the bag from the former and causing its entrance between the pair of rollers *i, i*, which are arranged at the back of the machine in the vibrating frame J, to take the bag and complete it by pressing the laps close together, and discharge it from the machine. The knock-off I, consists of a straight edged piece of plate arranged between the former and the table C, and attached to a curved arm I', which works through a slot *m*, in the back of the table and is pivoted by a pin *k*, to a lever L, which works on a fixed fulcrum *j*, below the main shaft E. The said lever L, is operated upon to raise the knock-off, as or directly after the former F, rises by the downward pressure upon its rear end of an arm *l*, attached to the horizontal rock shaft K, of the vibrating frame J, the said arm being operated to throw forward the vibrating frame by the action upon it of the cam *h*. As the knock-off is thus raised its curved arm *i*, which is held in contact with the front end of the slot *m*, by a spring *t*, connecting it with the upper front rail of the frame is caused by the action of its curved front edge in the said slot to move back and to cause the edge of the knock-off to strike the turned down lap 10, of the bag and thus to start it from the former and cause it to enter between the rollers *i, i*, which are kept constantly revolving in the direction of the arrows shown upon them in Fig. 1, by two belts, *n, o*, one of which runs from a pulley *p*, which is fast on the main shaft E, to a pulley *q*, which is loose on the rock shaft K, and the other from the latter pulley to a pulley *r*, on the lower of the two rollers. The action of the cam *h*, upon the arm *l*, at the same time that it caused the knock-off to rise and strike the bag, brought forward the vibrating frame J, to meet the bag, that the rollers *i, i*, might seize it, and this being done, the cam allows the vibrating frame to be thrown back by the upward pull upon the arm *l*, of a spring *s*, connecting it with the upper front rail of the frame and the frame thus moving back with its rollers *i, i*, in motion on their axes, draws the bag completely off the former F, and the whole

Statement of the case.

length of the bag is caused to pass right through or between the said rollers, and be discharged over the back of the machine, receiving such pressure from the rollers in passing between them as to flatten its folds and laps and cause the perfect adhesion of the laps. The spring *s*, above mentioned, is connected with the rear end of the lever *L*, and at the same time as it draws up the arm *l*, to throw back the vibrating frame draws down the knock-off in advance of the descent of the former *F*, so that the feeding forward of the paper for the next bag may not be interfered with.

I will remark that the former *F*, applied attached as described to the cutter so as to be operated by the same simple means, the bottom lap paster, the knock-off, and the vibrating frame *J*, and its rollers *i*, *i*, may be arranged in the same manner in combination with rollers for folding the sides of the bag instead of with lappers like *G*, *G*.

What I claim as my invention and desire to secure by letters patent, is—

1st. Making the cutter which cuts the paper from the roll or piece of the form herein described that in cutting off the paper, it also cuts it to the required form to fold into a bag without further cutting out.

2d. The attachment of the former *F*, directly to the cutter to operate in combination therewith, and with a folding table *C*, substantially as herein described.

3d. The within described mode of applying and arranging the paster *f*, to operate in combination with the folding table *C*, and former *F*.

4th. The construction of the side lappers with angular ends *e e*, substantially as described, for the purpose of partly folding the bottom lap by the act of folding the sides of the bag.

5th. The knock-off *I*, operating in combination with the former, substantially as and for the purpose described.

6th. The vibrating frame *J*, with its rollers *i i*, operating in combination with the former and the knock-off substantially as and for the purpose herein described.

Argument of counsel.

7th. The arrangement of the table, the cutter, the former, the side lappers, the bottom paster, the knock-off, the vibrating frame J, to operate in relation to and in combination with each other, substantially as described.

WILLIAM GOODALE.

Witnesses :

EZRA SAWYER,
H. T. GOODALE.

Mr. George Harding, for appellants :

J. Boyd Elliot, an expert, thus testifies that the cutters in making appellees' bags infringed the appellants' patent, "I also find in complainants' Exhibit No. 10, one of the patents granted to Merrick Murphy, a representation of the cutter for forming paper bags, so shaped that in the operation of separating the blanks from the roll of paper in the formation of bags, it will perform the same function as the cutter referred to in the first claim of the Goodale patent and in substantially the same manner, that is the serrated edge of said cutter is so shaped as to form a blank for the bags, so that the seam may be made in the middle of the bag and the bottom will be provided with a lap, so that both parts may be pasted firmly together on one side of the bag and the top be provided with a lip for the convenience of opening the bag when it is to be used ; * * * as soon as the cutting operation has progressed to the depth of the small teeth in the cutter shown at G, Fig. 1," complainants' exhibit 11, "the cutting operation begins, and the cutter then becomes substantially such an instrument as the one claimed in the Goodale patent and referred to in the first claim thereof, for the reasons that the rest of the cutting is continued by a series of cutting edges which form a blank for paper bags that has a lap at the bottom and a lip at the top for opening the bag, and in my opinion, this constitutes a cutter substantially like the one described and claimed in the Goodale patent."

The simple question before the court is one of infringe-

Argument of counsel.

ment and it is submitted for the consideration of the court upon the foregoing statement, the state of the art and the appellants' invention.

(The entire argument was taken up with explanations of prior patents showing the state of the art.)

Mr. Samuel S. Boyd, for appellees :

As it is well settled that no one can be said to infringe a combination claim who does not use the entire combination Corn-Planter Patent, 23 Wall. 181 [10 Am. & Eng. 1], it only remains to inquire whether we find these four essential elements of the appellants' combination, or their equivalents, in the Murphy machines or either of them. The creasing rolls are wanting, because not needed as Murphy cuts the paper in the flat—that is without first folding it in any manner. The supporting bar is wanting, for whatever may be the purpose of the plate used by Murphy in the latter stages of his process, it clearly is not the equivalent of the Rice supporting bar, for it has no relation whatever to the operation of severing the paper, that operation having been entirely completed before the plate is reached. The reciprocating rolls are not used by us, ours being simply the ordinary drawing rolls which are seen in the machines prior to Rice, and which Rice does not even pretend to claim. We use a revolving striker, having a *continuous*, not reciprocating motion and which does not in any manner penetrate the paper as does Rice's. More than this it is clear that Murphy's machine cannot cut a *tube* into the required form—and Rice's cannot cut in a *flat*—but the movement of the paper in Rice's is and must of necessity be *intermittent* on account of the vibrating motion of the cutter, while in Murphy's it is *continuous*; there is another important distinction between our cutting apparatus and Rice's, we can cut a bag blank of any outline we desire by simply changing the fixed blade, a thing impossible to be done with the Rice machine—a fact which of itself is very persuasive evidence that the machines are different in

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principle and construction. Enough has been said, we submit to show that when Rice's claim is considered as the law and the state of the art demand, it is clear we do not infringe thereon by either of our cutting devices.

Murphy not only leaves out many of the essential elements of Goodale, but adds devices, the counterpart or equivalents of which cannot be found in Goodale, nor anything which performs their offices or enables the same result to be produced. We submit that the claims of Rice and Goodale must be strictly limited to the specific devices by which the result in each is attained, otherwise they are each and both subject to the objection of claiming a result broadly, and when so limited we do not by either of our constructions infringe upon said patents, and consequently the decrees below contain no error and should be formed.

Mr. Justice CLIFFORD delivered the opinion of the court :

Rights secured to an inventor by letters patent are property, which consists in the exclusive privilege of making and using the invention, and of vending the same to others to be used, for the period prescribed by the Patent Act ; and the provision is that every patent and any interest therein shall be assignable in law by an instrument in writing. R. S., secs. 4884, 4898.

Letters patent (*a*) bearing date July 12, 1859, were granted to William Goodale, for new and useful improvements in machinery for making paper bags, as more fully described in the specification. Patents, at that date, were granted for the period only of fourteen years ; but the record shows that the same was duly extended for the further term of seven years from the expiration of the original term, and that the patentee, on the 14th of July, two days subsequent to the extension of the patent, by an instrument in writing, sold and assigned all his right, title and interest in the pat-

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(*a*) Otto inserts " No. 24,734. "

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ent to the complainants, who instituted the present suit. What they charge is that the respondents are making and using the patented improvement, the title to which they acquired by virtue of the aforesaid written assignment.

Service was made ; and the respondents appeared and filed an answer, setting up several defences, all of which are abandoned except the one denying the charge of infringement. Proofs were taken ; and the Circuit Court, having heard the parties, entered a decree dismissing the bill of complaint. Prompt appeal to this court was taken by the complainants ; and they now assign for error the decree of the Circuit Court in dismissing the bill of complaint, it being conceded that it was dismissed upon the ground that the charge of infringement was not proved.

Machines for making paper bags are old, as both sides admit ; and the evidence in this case shows that they have been constructed by many persons and in various forms for more than twenty years, and with more or less utility. Neither party, in this case, claims to be the original and first inventor of an entire machine of the kind ; nor could such a claim, if made, be sustained, in view of the admitted state of the art. Improvements in various parts of such a machine are claimed by the assignor of the complainants ; but, inasmuch as the charge of infringement is confined to the first claim of the patent, it will be sufficient to describe the nature and operation of the principal device embodied in that claim, without attempting to give any minute description of the other parts of the machine.

Seven claims are annexed to the specification, the one in question being described in substance and effect as follows : Making the cutter, which cuts the paper from the roll, in such form that in cutting off the paper, it cuts it in the required form to fold into a bag without further cutting out.

Such a machine, of course, has a frame which supports all its parts, and it also has a table to support the paper as it is unwound from the roll and moved forward under the cut-

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ter. Prior to the operation, the roll is prepared, being of the proper width to fold lengthwise and form the bag. Feed-rollers are arranged in the machine for moving the paper under the cutter as it is unwound from the roll, the cutter being attached to a horizontal bar, and working within vertical guides erected on opposite sides of the machine. Operating vertically, as the cutter does, it will be sufficient to state that it derives its upward movement from two cams on a constantly rotating horizontal shaft, and that it descends by its own weight, which is sufficient to cause the cutting of the paper by the cutter, the descent taking place during the intermissions between the feeding movements of the paper.

Devices and means for forming the bag of the desired length and width, are also shown in the specification and drawings, together with the devices and means for effecting the side lapping over the device called the former, and the devices and means for pasting one edge of the same by passing it over a paste roller, which causes it to adhere so as to form the seam when the edges of the blank are folded over by the lappers. Both the sides of the blank, so called, and the lap at the bottom are pasted by the means described in the specification. But it is unnecessary to enter into these details in this investigation, as the charge of infringement is limited to the first claim.

Evidence of a satisfactory character is exhibited, to show that the assignor of the complainants was the first person to organize an operative machine to make paper bags from a roll of paper in the flat sheet, by a transverse cut across the same with a knife having five planes, so that the blanks, so called, when cut and folded, will present a paper bag of the form and description given in the specification and drawings of the patent.

Wide differences exist in the arrangement of the devices composing the operative parts of the respondents' machine in question, from those exhibited in the machine of the

Opinion of the court.

complainants ; but the frames are not substantially different, and the machine of the respondents has two uprights which afford bearings for the shaft, and for the roller on which the paper is wound, and for two sets of feed rollers which perform the same function as the feed rollers in the complainants' patent. Instead of the cutter arranged to ascend and descend, as described in the complainants' specification, the respondents have a knife with a serrated edge, which is attached to the bed beneath the shaft on a line with the feed rollers, lying on its side, so that the paper, when moved by the rollers, will pass freely over it, as it extends slightly beyond the edge of the bed. Being attached to the bed, the knife, though it is substantially in the form of the cutter employed in the complainants' machine, neither rises nor falls, nor would it perform any function whatever in the machine were it not for the striker, which is a straight piece of metal with a blunt edge made to revolve with the shaft, which, by the aid of certain other devices, first causes it to rise, and then throws it sharply down in such a manner that it makes a vertical blow upon the paper, causing the knife to sever it as effectually as the cutter does in the complainants' machine, showing that the two devices, to wit: the knife and the striker, operating together, perform the exact same function as that performed in the complainants' machine by the ascent and descent of the cutter.

Argument to show that the form of the knife and the cutter are substantially the same is quite unnecessary, as that is proved to a demonstration by a comparison of the two devices. Nor can it make any difference that the cutter is made to cut the paper by its own gravity, while the knife is made to cut by the fall of a device which performs no other function than to fall upon the paper at the proper moment, and cause the stationary knife to cut for the same purpose.

Decided support to that proposition is found in the testimony of the expert witness examined for the complainants.

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He testifies that he finds in the patent of the respondents the representation of a cutter for forming paper bags, so shaped that, in the operation of separating the blanks from the roll of paper in the formation of bags, it will perform the same function as the cutter in the complainants' machine ; giving as his reason for the conclusion, that the serrated edge of the knife, as it is there called, is so shaped as to form a blank for the bags, so that the seam may be made in the middle of the bag, and that the bottom is provided with a lap so that both parts may be firmly pasted together, and the top provided with a lip for the convenience of opening the bag when it is used.

Explanations of a valuable character are also made by the same witness in respect to the particular form of the knife employed by the respondents in their machine when used to form the lip at the top or bottom of the bag. Speaking of the fact that the knife used by the respondents has serrations or teeth of different degrees of depth, he says that their outer points all coincide with the same straight line across the paper, and that the operation of cutting, when it has progressed to the depth of the small teeth in the knife, becomes substantially the same as that performed by the cutter in the complainants' machine, for the reason that the rest of the cutting is continued by a series of cutting edges that have a lap at the bottom and a lip at the top, or, in other words, the cutting that is commenced in a straight line ceases as soon as the small teeth cease to cut, and then the coarser teeth continue the cutting operation down to their full extent, and constitute a cutter substantially like the one employed in the complainants' machine.

Suppose the explanation last given is too theoretical for practical application ; still, we are all of the opinion that the knife and the striker employed by the respondents perform substantially the same function as the cutter in the complainants' machine, with the devices for raising it up

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and letting it drop upon the paper as it is moved forward by the rollers.

Except where form is of the essence of the invention, it has but little weight in the decision of such an issue, the correct rule being that, in determining the question of infringement, the court or jury, as the case may be, are not to judge about similarities or differences by the names of things, but are to look at the machines or their several devices or elements in the light of what they do, or what office or function they perform, and how they perform it, and to find that one thing is substantially the same as another, if it performs substantially the same function in substantially the same way to obtain the same result ; always bearing in mind that devices in a patented machine are different in the sense of the patent law when they perform different functions or in a different way, or produce a substantially different result

Nor is it safe to give much heed to the fact that the corresponding device in two machines organized to accomplish the same result is different in shape or form, the one from the other, as it is necessary in every such investigation to look at the mode of operation or the way the device works, and at the result, as well as at the means by which the result is attained.

Inquiries of this kind are often attended with difficulty ; but if special attention is given to such portions of a given device as really does the work, so as not to give undue importance to other parts of the same which are only used as a convenient mode of constructing the entire device, the difficulty attending the investigation will be greatly diminished, if not entirely overcome. *Cahoon v. Ring*, 1 Cliff. 620.

Authorities concur that the substantial equivalent of a thing, in the sense of the Patent Law, is the same as the thing itself ; so that if two devices do the same work in substantially the same way, and accomplish substantially the same result, they are the same, even though they differ in name, form or shape. *Curt. Pat.* 4th ed., sec. 310.

Notes and Citations.

Apply that principle to the case before the court and it is clear that the knife in the respondents' machine, when considered in connection with the striker, is substantially the same thing as the cutter in the machine of the complainants when put in operation by the means employed to raise it and let it fall to perform the cutting function, without which the machine would be of no value.

Tested by these considerations, it is clear that the decree of the Circuit Court is erroneous, even if the construction of the patent is that which the respondents assume it to be, as they do not contend that the claim for the cutter used by the complainants, as embodied in the first claim of their patent, is invalid.

Decree reversed and the cause remanded, with directions to enter a decree in favor of the complainants, and for further proceedings in conformity with the opinion of this court.

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Notes :

Equivalents defined :

Gill v. Wells, 22 Wall. 1 [9 Am. & Eng. 471].

Rowell v. Lindsay, 113 U. S. 97.

Patent in Suit :

No. 24,734. Goodale, W. July 12, 1859. Paper Bag Machine.

OTHER SUITS ON SAME PATENT :

Union Paper Bag Machine Co. v. Pultz & Walkley Co., 1878. 15 Blatch. 160; 3 Ban. & Ard. 403; 15 O. G. 423.

Notes and Citations.

Union Paper Bag Machine Co. v. Pultz & Walkley Co., 1879; 16 Blatch. 76; 4 Ban. & Ard. 181.

Cited:

IN SUPREME COURT IN:

Gage v. Herring, 1883. 107 U. S. 640; Bk. 27 L. ed. 601.
Cantrell v. Wallick, 1886. 117 U. S. 689; Bk. 29 L. ed. 1017.

IN CIRCUIT COURTS IN:

Union Paper Bag Machine Co. v. Pultz & Walkley Co., August, 1878. 15 Blatch. 160; 3 Ban. & Ard. 403; 15 O. G. 423.
American Diam. Rock Boring Co. v. Sheldon, October, 1879. 17 Blatch. 209; 4 Ban. & Ard. 551.
Holly v. Vergennes Machine Co., October, 1880. 18 Blatch. 327; 4 Fed. Rep. 74; 11 Reporter, 364; 18 O. G. 1177.
New York Bung and Bushing Co. v. Hoffman, September, 1881. 20 Blatch. 3; 9 Fed. Rep. 199; 12 Reporter, 582; 20 O. G. 1451.
Shaver v. Skinner Mnfg. Co., January, 1887. 30 Fed. Rep. 68; 41 O. G. 232.
Steam Gauge and Lantern Co. v. Ham Mnfg. Co., September, 1886. 28 Fed. Rep. 618.
Wright v. Yuengling, February, 1888. 42 O. G. 829; 33 Fed. Rep. 655.

IN DECISIONS OF COMMISSIONER OF PATENTS IN:

Funck, August, 1878. 14 O. G. 158.

MACHINE CO. v. MURPHY.

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Notes and Citations.

IN TEXT-BOOKS:

Merwin on Pat. Invt., 1883, pp. 678, 679.

[illegible]

Syllabus.

THE CITY OF ELIZABETH, GEORGE W. TUBBS AND
THE NEW JERSEY WOOD PAVING COMPANY,
APPELLANTS, v. THE AMERICAN NICHOLSON
PAVEMENT COMPANY.*

97 (7 Otto) U. S. 126-144. Oct. Term, 1877.

[Bk. 24, L. ed. 1000.]

Reversing in part American Nicholson Pavement Co. v. City of
Elizabeth, 1 Ban. & Ard. 439.

Argued April 4, 5, 1878. Decided May 13, 1878.

*Particular patent construed. Novelty. Infringement. Prior
foreign patent—date of, in order to anticipate. Public experi-
mental use not abandonment. Public use. Profits. Burden of
proof. Contract. Reduction of profits.*

1. Reissued letters patent No. 2,748, S. Nicholson, August 20, 1867 (original No. 11,491, of August 8, 1854), Wooden Pavement, *construed* to be for a combination and *held* not anticipated by an English patent published subsequent to the date of his invention, but prior to the date of his patent; *held* not abandoned by a public experimental use made six years prior to his application and is infringed by the pavement constructed under letters patent No. 85,786, Brocklebank & Trainer, January 12, 1869, Wooden Pavement. (p. 535.)
2. A foreign patent or other foreign printed publication describing an invention is no defence to a suit upon a patent of the United States, unless published anterior to the making of the invention or discovery secured by the latter, provided that the American patentee, at the time of making application for his patent, believed himself to be the first inventor or discoverer of the thing patented. (p. 538.)
3. Where the use made of the invention for six years prior to the application was a public one but for the purpose of experiment and in order to test its qualities and remedy its defects, *held* that it was not in public use or on sale with patentee's consent and allowance for more than two years prior to his application

* See Explanation of Notes, page III.

Syllabus.

within the meaning of Act 1836, secs. 6, 7 and 15 as qualified by Act 1839, sec. 7. (p. 538.)

4. An abandonment of an invention to the public may be evinced by the conduct of the inventor at any time, even within the two years named in the law (Act 1836, secs. 6, 7 and 15, and Act 1839, sec. 7). No such consequence will necessarily follow from the invention being in public use or on sale with the inventor's consent and allowance at any time within two years before his application; but if the invention is in public use or on sale prior to that time it will be conclusive evidence of abandonment. (p. 542.)
5. In what an experimental use may consist as distinguished from a public use or being on sale within the meaning of the law. (p. 543.)
6. It is not a public knowledge of his invention that precludes the inventor from obtaining a patent for it, but a public use or sale of it. (p. 545.)
7. If an infringer of a patent has realized no profits from the use of the invention, he cannot be called upon to respond for profits; the patentee in such case is left to his remedy for damages.
General rules stated as to when profits are recoverable in equity. (p. 547.)
8. Where it was found that defendants, infringers, had made no profits, which failure to find was not excepted to by complainants, and no proof was offered by them to show defendants' profits, a decree making them accountable for profits was held erroneous. (p. 548.)
9. Where infringers also operating under a patent alleged as cause of error a failure to specifically show the profits arising from the respective devices, *held* that the burden of showing it was on them. (p. 550.)
10. A contract between appellee and its assignor as to charges relating to a patent, *held* a stipulation between third parties with which appellants' infringer had no concern and of which they could not avail themselves in reduction of profits. (p. 552.)

[Citations in the opinion of the court:]

Curtis, Pat. §§ 375, 375 a. p. 538.

Shaw v. Cooper, 7 Pet. 292 [4 Am. & Eng. 286]. p. 543.

Statement of the case.

Lewis v. Marling, 10 Barn. & C. 22. p. 545.

Mowry v. Whitney, 14 Wall. 434 [8 Am. & Eng. 506]. p. 548.

Cawood Patent, 94 U. S. 695 [p. 235 *ante*]. p. 548.

Livingston v. Woodworth, 15 How. 546 [6 Am. & Eng. 167]. p. 548.

Rubber Co. v. Goodyear, 9 Wall. 788 [8 Am. & Eng. 150]. p. 548.

Appeal from the Circuit Court of the United States for the District of New Jersey. The case is stated by the court.

The specifications and drawings of the Nicolson reissue and of the Brocklebank and Trainer patents are as follows :

SAMUEL NICOLSON, OF BOSTON, MASSACHUSETTS.

IMPROVED WOODEN PAVEMENT.

Specification forming part of Letters Patent No. 11,491, dated August 8, 1854; Reissue No. 1,583, dated December 1, 1863; Reissue No. 2,748, dated August 20, 1867.

To all whom it may concern :

Be it known that the following is a full, clear, and exact description of the new and useful Improved Wooden Pavement invented by me, Samuel Nicolson, of Boston, in the State of Massachusetts, and for which Letters Patent were granted to me on the 8th day of August, in the year of our Lord 1854, and for which new and reissued Letters Patent were granted to me on the 1st day of December, in the year of our Lord 1863, the said last-mentioned Letters Patent having been surrendered for the purpose of describing the same invention and pointing out in what it consists in more clear, full, and exact terms than was done in the said original or amended specifications.

The nature and object of my invention consist in providing a process or mode of constructing wooden-block pavements upon a foundation along a street or roadway with facility, cheapness, and accuracy ; and also in the creation and construction of such a wooden pavement for streets and

S. Nicolson,
Wooden Pavement,
Nº 2,748, Reissued Aug. 20, 1867.

Fig. 2.

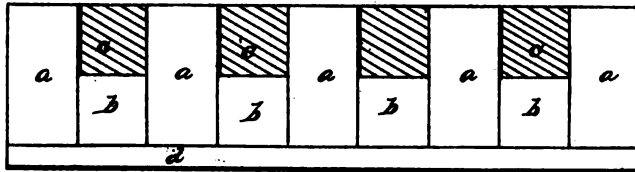
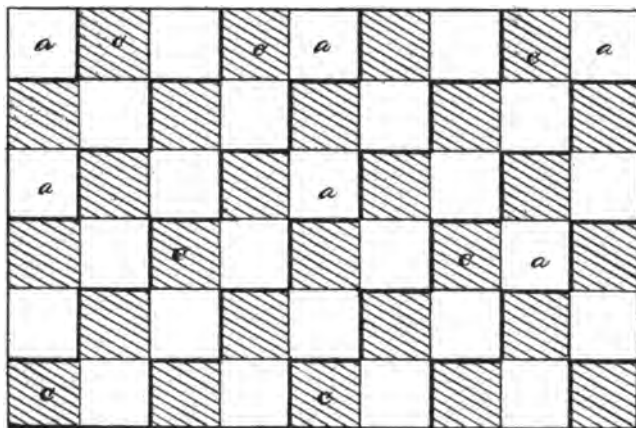


Fig. 1.



Witnesses:

Stephen A. Goodman
Charles F. Taylor

Inventor:

Samuel Nicolson

S. Nicolson,
Wooden Pavement,
N^o 2,748, *Issued Aug. 20, 1867.*

Fig: 1.

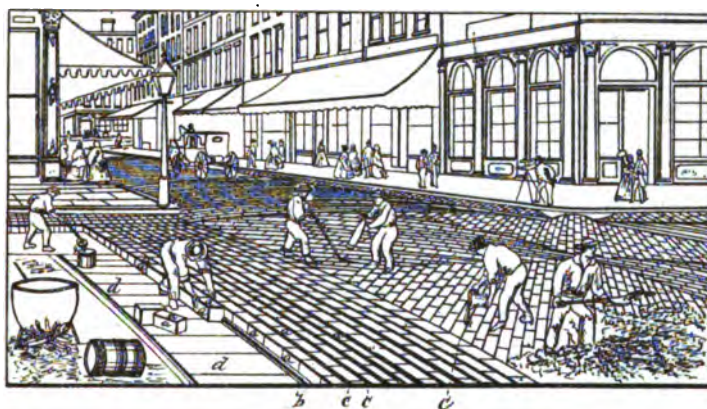


Fig: 3.

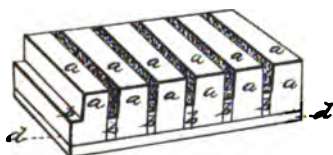
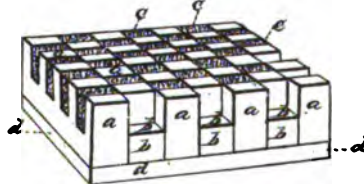


Fig: 2.



Witnesses:

Stephen A. Gordon
Charles N. Taylor

Inventor:

Samuel Nicolson

Statement of the case.

roadways as shall be comparatively permanent and durable by so uniting and combining all its parts, both superstructure and foundation, so as to provide against the slipping of the horses' feet, against noise, against unequal wear, and against rot on or from the top surface, and against rot and consequent sinking away from below.

For a clear understanding of the manner of constructing my improved wooden pavement, I refer to the accompanying drawings, with corresponding letters of reference, making part of this specification, of which Drawing No. I, Fig. 1, represents a top view of the first plan of said pavement, and Fig. 2 of the same drawing represents a transverse and vertical section of the same; and Fig. 1 of Drawing No. II represents a perspective view of the said pavement constructed and in the process of construction after the second plan or modification; and Fig. 2, Drawing No. II, a further perspective view of a section of the said pavement on the first plan; and Fig. 3, Drawing No. II, a further perspective view of a section of the said pavement on the second plan.

The earth of a roadway upon which my improved wooden pavement of either plan is to be constructed must first be suitably graded in any of the usual and well-known methods, in order to prepare it for the reception of such pavement. When the street or roadway has thus been prepared for the reception of my pavement, I then cover the surface of the roadway or bed with tarred paper, or with hydraulic cement laid over it about two (2) inches in thickness, or with a cheap flooring of boards or plank, which may also be covered with tar on one or both sides by swabbing or by dipping the boards or plank; or any other preventative to moisture may be used in connection with said foundation or support, the object and effect of such foundation being the support afforded such pavement, and to prevent the absorption of moisture from the ground by the wooden blocks. Said foundation is designated in said drawings by the letters, *d d*.

In further carrying out my invention I employ two (2)

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sets of blocks, or a set of blocks and strips. The one set of blocks, which may be called the "principal" set of blocks, forms, when the pavement is completed, the wooden surface of the pavement, and the other or auxiliary set of blocks or strips forms no part of the wooden surface of the pavement, but determines the size of the groove or channel way between the principal blocks, which is afterward to be filled with broken stone, gravel, and tar, while the principal set of blocks must be of uniform height and of suitable texture to form a proper surface for the pavement. The auxiliary set need be of no particular height or texture; but they must not permanently and entirely fill the grooving intended for the gravel, broken stone, and tar when the pavement is completed.

The principal set of blocks is cut with parallel sides, lines, or surfaces from joist or timber about four inches square, or of other suitable shape and dimensions in cross-sections, being made eight inches in length. The auxiliary blocks may be formed of about half the length of the others; but they must be of such thickness or cross-section as to form the proper boundary of the groove. The principal blocks are placed end upward upon said foundation or support, and are arranged both transversely and longitudinally, so that the principal and the auxiliary blocks shall be arranged alternately in each direction, or run as seen in the drawings. By such an arrangement spaces or cells *c c c*, between the principal blocks are formed, each of said cells being bounded by four of the principal blocks, the upper ends of the principal blocks, when thus placed together, present a checkered or tessellated appearance, and they will exhibit the open spaces arranged together in a similar manner. Into each of these cells a small quantity or layer of coarse salt may be put. These cells are filled up with small broken stone or coarse clean gravel, the whole being firmly rammed, so that the upper surface of the mass shall be firm and level. Next, mineral or vegetable tar or pitch is to be poured over the whole surface of the pavement

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and into the cells or cavities containing the broken stone or gravel, so as to penetrate entirely between the pieces of stone or gravel and cement them together. The tar penetrating into the squares containing the broken stone or gravel will cause the masses of the stone to adhere firmly to the surrounding blocks, and will admit of expansion of the mass by the weight of the wheels of carriages in passing over them, such expansion serving to fill up the space which might otherwise be made by shrinkage of the wooden blocks.

In order to prevent the blocks from being forced below one another in some of my modes of constructing the pavement, they may be pinned together with wooden pins extending from block to block.

Instead of the broken stone and tar, any other suitable cementing material may be employed in the cells. I prefer, however, common tar or pitch and gravel or broken stone, as such in practice has been found to operate to great advantage and to be very durable in use and to present a surface on which it is very difficult for horses to slip or slide, as is frequently the case on ordinary pavements when the surface is wet or covered with mud. The auxiliary strip may be about half the height of the principal block; but it must not be permitted to fill up the grooves permanently and entirely when the pavement is completed, or to form any part of the surface of the pavement.

My invention may be carried out in another form—that is to say, upon the plan or second modification seen in Figs. 1 and 2 of Drawing No. II. The principal blocks are arranged side by side transversely of the roadway, alternately with strips of board, edgewise or vertical, in thickness about one-third of the principal blocks, placed transversely upon the foundation or support, and in this mode of construction so arranged as to form spaces of about one inch in thickness between the rows of principal blocks.

I would remark, as to the durability of my pavement, that for the purpose of experiment I have had some of it in use

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for six years before the month of March, 1854, on a road on which the travel has been very great.

Some of the advantages of my pavement are to be found in the hold that it offers for the feet of horses, in the little noise that it produces while carriages are passing over it, the absence of noise resulting from the peculiar character of the material of which the pavement is composed.

This pavement is also very durable, its durability being occasioned by the friction of the travel over it, being produced upon the slightly elastic extremities of the fibers of the wooden blocks, and by its solidity and durable material in the filling.

Moisture is excluded from the wood by the materials employed for the support of the blocks, also by the preventives, also by the tarry covering which is placed over the top surface, as hereinbefore described.

My pavement has the advantage of great cleanliness in comparison with most other pavements, because, in the first place, as there is very little wear of its upper surface, very little dirt is likely to form upon it, and such as does form is quickly removed therefrom by rains and winds.

There is a further advantage in respect to facility, cheapness, and accuracy in the process or method of forming the channels, grooves, or receptacles required for the desired filling in my improved construction, which results from two sets or series of parallel side blocks (or blocks and strips of board) employed as above mentioned. By this method of forming such channels, grooves, or receptacles, the parallelism of the same and of the principal blocks forming the ultimate surface of the pavement, and the uniformity in width or size and distance one from another of such channels, grooves, or receptacles, are effected in a cheap, simple, and expeditious manner directly upon the prepared foundation resting upon the roadway, and any necessity of constructing the pavement in portable compartments is avoided.

Having thus fully described the parts and combination of parts and the operation of my improved wooden pavement,

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and shown various modes in which the same may be constructed and made to operate without changing the principle of its construction and operation, I claim as an improvement in the art of constructing pavements—

1. Placing a continuous foundation or support, as above described, directly upon the roadway, then arranging thereon a series of blocks having parallel sides endwise in rows, so as to leave a continuous narrow groove or channel-way between each row, and then filling said grooves or channel-ways with broken stone, gravel, and tar, or other like materials.

2. The formation of a pavement by laying a foundation directly upon the roadway, substantially as described, and then employing two sets of blocks, one a principal set of blocks that shall form the wooden surface of the pavement when completed, and an auxiliary set of blocks or strips of board which shall form no part of the surface of the pavement, but determine the width of the groove between the principal blocks, and also the filling of said groove, when so formed, between the principal blocks, with broken stone, gravel, and tar, or other like material.

3. Placing a continuous foundation or support, as above described, directly upon the roadway, and then arranging thereon a series of blocks having parallel sides endwise in a checkered manner, so as to leave a series of checkered spaces or cavities between said blocks, and then filling said checkered cavities with broken stone, gravel, and tar, or other like material.

4. The formation of a pavement by laying a foundation directly upon the roadway, substantially as above described, and then employing two sets of blocks—viz., one a principal set of blocks that shall form the wooden surface of the pavement, and an auxiliary set of blocks that shall form no part of the wooden surface of the pavement, but determine the dimensions of the tessellated cavities between the

Statement of the case.

principal blocks, and then filling said tessellated cavities with broken stone, gravel, and tar, or other like material.

SAMUEL NICOLSON.

Witnesses:

STEPHEN A. GOODWIN,
DANIEL SHARP,
CHAS. F. THAYER.

JOHN W. BROCKLEBANK AND CHARLES TRAIN-
ER, OF NEW YORK, N. Y.

IMPROVED WOODEN PAVEMENT.

Specification forming part of Letters Patent No. 85,786,, dated
January 12, 1869.

To all whom it may concern :

Be it known that we, John W. Brocklebank and Charles Trainer, of the city, county, and State of New York, have invented a new and Improved Wood Pavement ; and we do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

This invention relates to improvements in wood pavements ; and consists in an improved arrangement of the same, whereby the flooring is strengthened and adapted for the better securing of the vertical blocks to the flooring, as hereinafter more fully described.

The drawing represents a longitudinal sectional elevation of our improved arrangement.

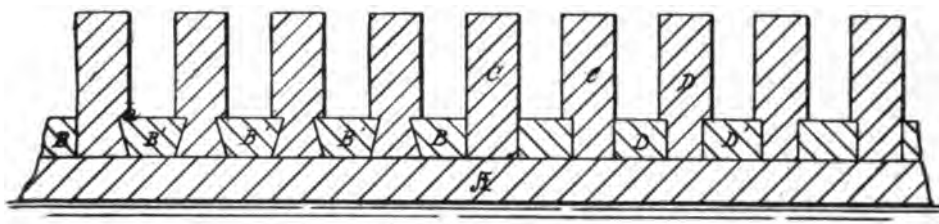
A represents the bottom layer of the flooring, and B B' and D' the upper transverse portion thereof, consisting of strips arranged between the vertical blocks C, and secured to the part A by nailing or otherwise. These strips serve

J. W. Brocklebank & C. Trainer.

Wood Pavement.

N^o 85786.

Patented Jan. 12. 1869.



Witnesses.

Am. E. Morgan
P. C. Dittmer

Inventor

John W. Brocklebank
Chas. Trainer

per M. M. M.
Attorneys

Statement of the case.

to strengthen the layer A, of boards, and to take a portion of the vertical pressure on the blocks C, while, at the same time, they serve the purpose of firmly securing the blocks to the floor.

According to one plan for preventing the blocks C from working upward, we arrange the dovetail rabbets on one side of the vertical blocks, as represented at *a*, the other side being straight and resting against the straight side of the strip B, and we bevel the edge of the strip B' to fit into the said dovetailed rabbet, whereby the blocks are firmly secured to the floor when the said strip B' is nailed or otherwise fastened down.

All the rows of blocks may be so rabbeted on one side and secured by strips B, having one vertical edge and one beveled to suit the rabbets ; or the said blocks may be rabbeted on both sides, and the strips fitted thereto ; or, again, two rows of blocks may be rabbeted on two sides, fronting each other, and a strip, B', placed as represented, while the said rows may be plain on their sides adjacent to the next rows each way, which are also plain, and every alternate space filled by a plain strip.

According to another plan, we propose to rabbet the lower ends, either on one or both sides, the said rabbets having vertical sides, and fit therein strips with vertical sides, as represented at D and D', to which the blocks may be nailed by nails driven diagonally.

We are aware that strips and short blocks have been interposed between the long blocks D C, to fill up the spaces, and onto which the gravel and other substances have been packed, but this arrangement we have found to be very imperfect, as the blocks are seldom of uniform thickness, which causes irregularity and looseness in packing them ; moreover, the said short blocks, being set endwise, afford no means for securing the long ones by nailing to the floor A and to them ; and when the strips are used, the common practice is to nail them diagonally to the sides of the blocks. These strips frequently fail of being brought down close to

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the bottom layer of the floor, owing to the curvature of the bed of the street, and consequently, when the filling is rammed down, the nails are broken, and the strips separated from the blocks.

By our arrangement, the ends of the blocks are brought to an exact and uniform thickness by rabbeting, whereby they may be packed tightly together, and the blocks also rest partly on the cross-strips.

Another and important advantage of our arrangement is that the pressure of the block upon the part A of the flooring is greatly equalized by the introduction of the strips into the rabbets in the blocks, so that, in case of any soft places under the flooring, the blocks immediately above it will not settle down so abruptly, their weight, and that of the load they have to sustain, being suspended over a greater surface by the said arrangement of the blocks and strips.

It will be understood that the spaces between the blocks and above the strips are to be filled with tar, gravel, cement and other substances, in the usual manner.

We claim as new and desire to secure by Letters Patent—

The combination of the bed A, transverse strips and vertical blocks, when the latter are rabbeted either on one or both sides, and either with dovetail rabbets or otherwise, and the said strips fitted to the rebates and secured to the part A, all substantially as and for the purpose specified.

The above specification of our invention signed by us this 14th day of December, 1868.

JOHN W. BROCKLEBANK,
CHAS. TRAINER.

Witnesses:

FRANK BLOCKLEY,
E. GREENE COLLINS.

Messrs. A. Q. Keasbey and Charles F. Blake, for appellants:

The answer alleges that the inventions of Nicholson were in continuous public use, with his consent and allowance,

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for six years prior to his application ; and that this public use amounted to an abandonment by said Nicholson.

The circumstances of the user were these : Nicholson laid the pavement. The *locus* was on a public toll road, of which he was superintendent.

We claim that this was a user in public, by the public, for the profit of Nicholson through his company, and in part performance of their public duty. This user made it impossible for him to obtain a valid patent, because the pavement had been in public use for more than two years prior to his application.

The corporation was created by the Statute of Massachusetts in 1814. Among its franchises was the right to make a dam, "And to connect the different parts thereof by bridges and causeways so as to render the same a good and substantial road, suitable for the passing of men, loaded teams, carts and carriages of all kinds, railed and furnished with lamps, and to receive toll for passing over the same." The franchises of this corporation have been considered and defined by the Supreme Judicial Court of Massachusetts.

Water Power Co. v. R. R. Co., 23 Pick. 360 ; Com. v. Bridge Co., 2 Gray, 58.

We contend that the use of this pavement upon their road was a use by the public for profit to the corporation.

The pavement was laid in performance of a public duty, the violation of which was punishable by indictment.

Any person who chose to pay toll had a right to use the pavement.

The profit from its use was insured by public enactments, which punished by fine all who used it without paying for it.

Once laid, this pavement ceased to be controlled by Nicholson, and became part of the system of public roads, subject to the supervision and direction of the public authorities.

What constitutes its use and experiment ? In 1849 he said he laid the pavement as an experiment, and claimed

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that it was a success. In 1854, about the time he got his patent, he said the same thing.

There is not one word of evidence that he ever changed the pavement in any way, examined it any way except superficially, or in any respect conducted any tests to learn the detail of its operation.

This is not an experiment. It is at best an attempt to ascertain its commercial value; not an endeavor to perfect his invention.

Pennock v. Dialogue, 2 Pet. 1 [4 Am. & Eng. 217]; *Rich v. Lippincott*, 2 Fish. 1.

"The statute, act of 1839, sec. 7, is inflexible as to the time when the patent is to be applied for, with reference to the prior use and sale of the invention. The neglect to apply within two years after such sale or use is invariably fatal. Whenever this fact appears, the patent falls; whenever these circumstances, the court have no dispensing power."

Cleveland v. Towle, 3 Fish. 525; *Goodyear v. Hills*, 3 Fish. 134; *Hussey v. Bradley*, 2 Fish. 362; *Sanders v. Logan*, 2 Fish. 167; *Rich v. Lippincott*, 2 Fish. 8; *Bell v. Daniels*, 1 Fish. 372; *Ransom v. Mayor of N. Y.*, 1 Fish. 252; *Adams v. Edwards*, 1 Fish. 12; *Adams v. Jones*, 1 Fish. 527; *Bartholomew v. Sawyer*, 1 Fish. 516; *Kendall v. Winsor*, 21 How. 322 [7 Am. & Eng. 1]; *Sickels v. Mitchell*, 3 Blatchf. 548; *Sargent v. Seagrave*, 2 Curt. 553; *Thompson v. Haight*, 1 U. S. Law Jour. 575; *Whitney v. Emmett*, Bald. 303; *Shaw v. Cooper*, 7 Pet. 292 [4 Am. & Eng. 286]; *Ryan v. Goodwin*, 3 Sumn. 514; *Wyeth v. Stone*, 1 Story, 273; *Reed v. Cutter*, 1 Story, 590; *McClurg v. Kingsland*, 1 How. 202 [4 Am. & Eng. 382]; *Stimpson v. R. R. Co.*, 4 How. 380 [4 Am. & Eng. 398].

The English and American cases both distinguish between an experimental and a public use. And it is well settled that a merely experimental use is not a public use, which renders a patent void. And there are cases where the ex-

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periment must be public, from the very nature of the invention.

Such cases are the *Engine Co. v. Pa. R. R. Co.*, 6 Gaz. 927, where about three years elapsed from the building of the first engine, with the improved track, to the date of the application. But there frequent changes were made in the engine.

In the *Newall and Elliot* patent, where the invention consisted in an improved apparatus for laying a submarine telegraph cable, the inventor used it in fulfilling a contract, and immediately applied for his patent.

In re Newall v. Elliot, 4 C. B. N. S. 295.

In these and the similar cases of *Seymour v. McCormick*, 16 How. 480 [6 Am. & Eng. 282], and *Winans v. R. R. Co.*, 2 Blatchf. 279, the nature of the invention required the experiment to be protracted and to be made in public. But no case can be found where the inventor used his invention without change for the period of six years, and then obtained a valid patent.

Pitts v. Hall, 2 Blatchf. 229; *Birdsell*, 6 Pat. Gaz. 682; *Henry v. Stove Co.*, 9 Pat. Gaz. 408; *Adamson's Patent*, 6 DeG. M. & G. 420; *Bramah v. Hardcastle*, 1 Web. Pat. Cas. 44, note *n* [1 Am. & Eng. 51].

The true view of the case is this: the invention was in use in public for six years. During all these years the inventor was idle and did nothing. It is immaterial what was his intent in laying his pavement. By its very use it passed from his control into that of the public. "Whatever be the intention of the inventor, if he suffers his invention to go into public use through any means whatsoever, without an immediate assertion of his right, he is not entitled to a patent; nor will a patent obtained under such circumstances protect his right."

Shaw v. Cooper, 7 Pet., 323 [4 Am. & Eng. 286].

Messrs. C. A. Seward and B. Williamson, for appellee:
Were Nicholson's experiments with the pavement on the

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mill-dam road, so long conducted that the law will infer, in the face of all the surrounding circumstances, from the mere length of time which elapsed, an absolute intention to abandon it? The law permits indefinite experiment, fairly and properly made for the purpose of experiment and of testing the value and durability of the invention. The cases are quoted in Bump's Law of Patents, 249. Those referred to in *Whitney v. Emmett*, 1 Bald. 310; *Winans v. R. R. Co.*, 2 Blatchf. 291; *McCormick v. Seymour*, 3 Blatchf. 209, and *Agawam Co. v. Jordan*, 7 Wall. 583 [8 Am. & Eng. 24], are illustrative of the rule, that a presumption of abandonment cannot be founded upon experimental use, fairly and properly made.

1. It is to be remembered that Nicholson's pavement was the first successful wooden pavement introduced into this country, and that it required ten years after the patent was issued, to obtain a public approval of the invention.

2. That it had to compete with stone pavements, especially with the Belgian, the most approved form of stone pavement.

3. Such competition involves primarily the question of durability, and second, that of cost. The question of durability is self-evidently a question of time, which cannot be judicially limited save as the evidence requires and justifies.

In view of these facts, what was it Nicholson's right to do? To demonstrate that his pavement was cheaper than stone pavement, which it is by two-thirds, and that it would last sufficiently long to justify its use in the place of the Belgian, this latter fact, that it would last sufficiently long to justify its use in place of the Belgian, could be established by continuous use only, and in a frequented thoroughfare.

Mr. Justice BRADLEY delivered the opinion of the court:

This suit was brought by the American Nicholson Pavement Company against the City of Elizabeth, New Jersey,

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George W. Tubbs, and the New Jersey Wood Paving Company, a corporation of New Jersey, upon a patent issued to Samuel Nicholson, dated August 20th, 1867, for a new and improved wooden pavement, being a second reissue of a patent issued to said Nicholson August 8th, 1854. The reissued patent was extended in 1868 for a further term of seven years. A copy of it is appended to the bill; and, in the specification, it is declared that the nature and object of the invention consists in providing a process or mode of constructing wooden block pavements upon a foundation along a street or roadway with facility, cheapness and accuracy, and also in the creation and construction of such a wooden pavement as shall be comparatively permanent and durable, by so uniting and combining all its parts, both superstructure and foundation, as to provide against the slipping of the horses' feet; against noise; against unequal wear; and against rot and consequent sinking away from below. Two plans of making this pavement are specified. Both require a proper foundation on which to lay the blocks, consisting of tarred-paper or hydraulic cement covering the surface of the road bed to the depth of about two inches, or of a flooring of boards or plank, also covered with tar, or other preventive of moisture. On this foundation, one plan is to set square blocks on end arranged like a checker-board, the alternate rows being shorter than the others, so as to leave narrow grooves or channel-ways to be filled with small broken stone or gravel, and then pouring over the whole melted tar or pitch, whereby the cavities are all filled and cemented together. The other plan is, to arrange the blocks in rows transversely across the street, separated a small space (of about an inch) by strips of board at the bottom, which serve to keep the blocks at a uniform distance apart, and then filling these spaces with the same material as before. The blocks forming the pavement are about eight inches high. The alternate rows of short blocks in the first plan and the strips of board in the second plan should not be

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higher than four inches. The patent has four claims, the two first of which, which are the only ones in question, are as follows:

"I claim as an improvement in the art of constructing pavements:

"1. Placing a continuous foundation or support, as above described, directly upon the roadway; then arranging thereon a series of blocks, having parallel sides, endwise, in rows, so as to leave a continuous narrow groove or channel-way between each row, and then filling said grooves or channel-ways with broken stone, gravel and tar, or other like materials.

"2. I claim the formation of a pavement by laying a foundation directly upon the roadway, substantially as described, and then employing two sets of blocks: one a principal set of blocks, that shall form the wooden surface of the pavement when completed, and an auxiliary set of blocks or strips of board, which shall form no part of the surface of the pavement, but determine the width of the groove between the principal blocks, and also the filling of said groove, when so formed between the principal blocks, with broken stone, gravel and tar, or other like material."

The bill charges that the defendants infringed this patent by laying down wooden pavements in the City of Elizabeth, New Jersey, constructed in substantial conformity with the process patented, and prays an account of profits, and an injunction.

The defendants answered in due course, admitting that they had constructed and were still constructing wooden pavements in Elizabeth, but alleging that they were constructed in accordance with a patent granted to John W. Brocklebank and Charles Trainer, dated January 12th, 1869, and denied that it infringed upon the complainant.

They also denied that there was any novelty in the alleged invention of Nicholson, and specified a number of English and other patents which exhibited, as they claimed,

every substantial and material part thereof which was claimed as new.

They also averred that the alleged invention of Nicholson was in public use, with his consent and allowance, for six years before he applied for a patent on a certain avenue in Boston called the mill-dam ; and contended that said public use worked an abandonment of the pretended invention.

These several issues, together with the question of profits, and liability on the part of the several defendants to respond thereto, are the subjects in controversy before us.

We do not think that the defence of want of novelty has been successfully made out. Nicholson's invention dates back as early as 1847 or 1848. He filed a *caveat* in the Patent Office, in August, 1847, in which the checker-board pavement is fully described ; and he constructed a small patch of pavement of both kinds, by way of experiment, in June or July, 1848, in a street near Boston, which comprised all the peculiarities afterwards described in his patent ; and the experiment was a successful one. Before that period, we do not discover in any of the forms of pavements adduced as anticipations of his, any one that sufficiently resembles it to deprive him of the claim to its invention. As claimed by him, it is a combination of different parts or elements, consisting, as the appellant's counsel, with sufficient accuracy for the purposes of this case, enumerates them : 1st of the foundation prepared to exclude moisture from beneath ; 2d, the parallel side-blocks ; 3d, the strips between these blocks, to keep them at a uniform distance and to create a space to be filled with gravel and tar ; and, 4th, the filling. Though it may be true that every one of these elements had been employed before, in one kind of pavement or another ; yet they had never been used in the same combination and put together in the same manner as Nicholson combined and arranged them, so as to make a pavement like his. The one which makes the nearest approach to it, and might, perhaps, be deemed sufficiently like

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to deprive Nicholson of the merit of invention is that of John Hosking, which, in one form, consisted of alternate rows of short and long blocks, the latter partially resting on the the former by their being mutually rabbeted so as to fit together. The spaces thus formed between the longer blocks, and on the top of the shorter ones, were filled with loose stone and cement or asphalt, substantially the same as in Nicholson's pavement. It would be very difficult to sustain Nicholson's patent if Hosking's stood in his way. But the only evidence of the invention of the latter is derived from an English patent, the specification of which was not enrolled until March, 1850, nearly two years after Nicholson had put his pavement down in its completed form, by way of experiment, in Boston. A foreign patent, or other foreign printed publication describing an invention, is no defence to a suit in a patent of the United States, unless published anterior to the making of the invention or discovery secured by the latter, provided that the American patentee, at the time of making application for his patent, believed himself to be the first inventor or discoverer of the thing patented. He is obliged to make oath to such belief when he applies for his patent; and it will be presumed that such was his belief, until the contrary is proven. That was the law as it stood when Nicholson obtained his original patent, and it is the law still. Act of 1836, secs. 7, 15; Act of 1870, secs. 24, 25, 61; R. S. secs. 4886, 4887, 4920; and see Curt. Pat. secs. 375, 375 *a*. Since nothing appears to show that Nicholson had any knowledge of Hosking's invention or patent prior to his application for a patent in March, 1854, and since the evidence is very full to the effect that he had made his invention as early as 1848, the patent of Hosking cannot avail the defence in this suit.

It is unnecessary to make an elaborate examination of the other patents which were referred to for the purpose of showing an anticipation of Nicholson's invention. They are mostly English patents, and we will only advert in a

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summary way to such of them as seem to be most nearly relevant to the question in controversy premising that in England the enrolment of the specification is the first publication of the particulars of a patented invention.

Stead's patent, enrolled in November, 1838, shows a plan of pavement consisting of a series of hexagonal, triangular or square-sided blocks, standing close together on the surface of the roadway, in a layer of sand, and being a little smaller at the bottom than at top, so as to admit a packing of sand, or pitch and sand, in the interstices between them, below the surface. Small recesses at the top, around the edges of the blocks, are suggested; apparently for giving a better hold to the horses' feet. It had no prepared foundation like Nicholson's, and no spaces filled with gravel, etc.

Parkins' patent, enrolled October, 1839, proposes a pavement to consist of blocks leaning upon each other, and connected together with a mixture of sand and bitumen, and connected by keys laid in grooves, and having grooves cut in the surface, either across the blocks or along their edges, to give the horses a better foot-hold. This plan exhibits no spaces to be filled with gravel or other filling.

Wood's patent, enrolled in April, 1841, shows a pavement made of adjoining blocks fitted together, but alternately larger and smaller at the top, like the *frustrum* of a pyramid, and not parallel sided; those larger at the top standing slightly higher than the others, so that when pounded down, or pressed by rollers or loaded vehicles, they would act as wedges, binding the whole pavement more tightly together. No filling is used on the surface, and no prepared foundation is suggested. In one form of his pavement he describes continuous grooves, the grooves being formed of blocks which are shorter than the others; and states that the groove is to be filled with concrete, coal-tar, etc., mixed with gravel or sand; but there is no foundation described for the pavement; and the description given for

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laying down the pavement, viz., by ramming down the taller blocks after considerable surface has been covered by the pavement, shows that the road-bed on which the blocks are to be laid is to be a yielding one, capable of conforming itself to the under surface of the blocks in the same way as sand does to the ordinary stone pavement when the stones are rammed.

Perring's patent, enrolled January, 1843, shows a pavement consisting, in one form, of blocks leaning one upon another in rows, with strips of board between the rows, coming to within an inch or so of the top of the pavement, and the same distance from the bottom, leaving gutters for the water underneath, and the adjoining rows being connected with pins passing through the strips of board. The rows are thus separated to enable the horses' feet to get a better hold. No filling is suggested and, indeed, would not be admissible, as the boards have no support but the pins; and no prepared foundation is required.

Crannis & Kemp's patent, enrolled August 21, 1843, presents, amongst other things, first, a pavement consisting of rows of blocks adjoining each other, but each block having a small recess on one side, on the surface, to enable the horses to get a better foothold; second, a pavement of alternate blocks adjoining each other, but differing in width, and slightly differing in height the top of one block being rounded off so as to make a groove next to the adjoining blocks, and the rounded blocks in one row alternating with the rectangular-topped blocks in the next row, the object of rounding off the alternate blocks being to give a foothold to the horses. This pavement is to be built on a flooring of plank, either one or two thicknesses, but without any preparation to exclude moisture, and it has no filling in the depressions or grooves formed by rounding the alternate blocks.

A French patent granted to Hediard in 1842, shows a pavement constructed of rows of blocks laid on a board

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foundation, cemented together by a thin filling (four-tenths of an inch thick) of cement or mastic, from top to bottom; no provision being made to prevent the accession of moisture from the ground below, and no strips between the rows to keep them separate from each other.

None of these pavements combine all the elements of Nicholson's, much less a combination of those elements arranged and disposed according to his plan. We think they present no ground for invalidating his patent, and no defence to this suit.

The next question to be considered is, whether Nicholson's invention was in public use or on sale, with his consent and allowance, for more than two years prior to his application for a patent, within the meaning of the 6th, 7th and 15th sections of the act of 1836, as qualified by the 7th section of the act of 1839, which were the acts in force in 1854, when he obtained his patent. It is contended by the appellants that the pavement which Nicholson put down by way of experiment, on Mill-Dam Avenue in Boston, in 1848, was publicly used for the space of six years before his application for a patent, and that this was a public use within the meaning of the law.

To determine this question, it is necessary to examine the circumstances under which this pavement was put down, and the object and purpose that Nicholson had in view. It is perfectly clear from the evidence that he did not intend to abandon his right to a patent. He had filed a *caveat* in August, 1847, and he constructed the pavement in question by way of experiment, for the purpose of testing its qualities. The road in which it was put down, though a public road, belonged to the Boston and Roxbury Mill Corporation, which received toll for its use; and Nicholson was a stockholder and treasurer of the corporation. The pavement in question was about seventy-five feet in length, and was laid adjoining to the toll-gate and in front of the toll-house. It was constructed by Nicholson at his own expense,

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and was placed by him where it was, in order to see the effect upon it of heavily loaded wagons, and of varied and constant use ; and also to ascertain its durability, and liability to decay. Joseph L. Lang, who was toll-collector for many years, commencing in 1849, familiar with the road before that time, and with this pavement from the time of its origin, testified as follows : " Mr. Nicholson was there almost daily, and when he came he would examine the pavement, would often walk over it, cane in hand, striking it with his cane, and making particular examination of its condition. He asked me very often how people liked it, and asked me a great many questions about it. I have heard him say a number of times that this was his first experiment with this pavement, and he thought that it was wearing very well. The circumstances that made this locality desirable for the purpose of obtaining a satisfactory test of the durability and value of the pavement were : that there would be a better chance to lay it there ; he would have more room and a better chance than in the city ; and, besides, it was a place where most everybody went over it, rich and poor. It was a great thoroughfare out of Boston. It was frequently traveled by teams having a load of five or six tons, and some larger. As these teams usually stopped at the toll-house, and started again, the stopping and starting would make as severe a trial to the pavement as it could be put to.

This evidence is corroborated by that of several other witnesses in the cause ; the result of the whole being that Nicholson merely intended this piece of pavement as an experiment, to test its usefulness and durability. Was this a public use within the meaning of the law ?

An abandonment of an invention to the public may be evinced by the conduct of the inventor at any time, even within the two years named in the law. The effect of the law is, that no such consequence will necessarily follow from the invention being in public use or on sale, with the in-

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ventor's consent and allowance, at any time within two years before his application; but that, if the invention is in public use, or on sale prior to that time, it will be conclusive evidence of abandonment, and the patent will be void.

But, in this case, it becomes important to inquire what is such a public use as will have the effect referred to. That the use of the *pavement* in question was public in one sense cannot be disputed. But can it be said that the *invention* was in public use? The use of an invention by the inventor himself, or of any other person under his direction, by way of experiment, and in order to bring the invention to perfection, has never been regarded as such a use. Curt. Pat. sec. 381; *Shaw v. Cooper*, 7 Pet. 292 [4 Am. & Eng. 286].

Now, the nature of a street pavement is such that it cannot be experimented upon satisfactorily except on a highway, which is always public.

When the subject of invention is a machine, it may be tested and tried in a building, either with or without closed doors. In either case, such use is not a public use within the meaning of the statute, so long as the inventor is engaged, in good faith, in testing its operation. He may see cause to alter it and improve it or not. His experiments will reveal the fact whether any and what alterations may be necessary. If durability is one of the qualities to be attained, a long period, perhaps years, may be necessary to enable the inventor to discover whether his purpose is accomplished. And though, during all that period, he may not find that any changes are necessary, yet he may be justly said to be using his machine only by way of experiment; and no one would say that such a use, pursued with a *bona fide* intent of testing the qualities of the machine, would be a public use, within the meaning of the statute. So long as he does not voluntarily allow others to make it and use it, and so long as it is not on sale for general use, he keeps the invention under his own control, and does not lose his title to a patent.

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It would not be necessary, in such a case, that the machine should be put up and used, only in the inventor's own shop or premises. He may have it put up and used in the premises of another, and the use may inure to the benefit of the owner of the establishment. Still, if used under the surveillance of the inventor, and for the purpose of enabling him to test the machine and ascertain whether it will answer the purpose intended, and make such alterations and improvements as experience demonstrates to be necessary, it will still be a mere experimental use and not a public use, within the meaning of the statute.

Whilst the supposed machine is in such experimental use, the public may be incidentally deriving a benefit from it. If it be a grist-mill, or a carding machine, customers from the surrounding country may enjoy the use of it by having their grain made into flour, or their wool into rolls, and still it will not be in public use, within the meaning of the law.

But if the inventor allows his machine to be used by other persons generally, either with or without compensation, or if it is, with his consent, put on sale for such use, then it will be in public use and on public sale, within the meaning of the law.

If, now, we apply the same principles to this case, the analogy will be seen at once. Nicholson wished to experiment on his pavement. He believed it to be a good thing, but he was not sure; and the only mode in which he could test it was to place a specimen of it in a public roadway. He did this at his own expense, and with the consent of the owners of the road. Durability was one of the qualities to be attained. He wanted to know whether his pavement would stand, and whether it would resist decay. Its character for durability could not be ascertained without its being subjected to use for a considerable time. He subjected it to such use in good faith, for the simple purpose of ascertaining whether it was what he claimed it to be.

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Did he do anything more than the inventor of the supposed machine might do, in testing his invention? The public had the incidental use of the pavement, it is true; but was the *invention* in public use, within the meaning of the statute? We think not. The proprietors of the road alone used the invention, and used it at Nicholson's request, by way of experiment. The only way in which they could use it was by allowing the public to pass over the pavement.

Had the City of Boston, or other parties, used the invention by laying down the pavement in other streets and places with Nicholson's consent and allowance, then, indeed, the invention itself would have been in public use, within the meaning of the law; but this was not the case. Nicholson did not sell it, nor allow others to use it or sell it. He did not let it go beyond his control. He did nothing that indicated any intent to do so. He kept it under his own eyes, and never for a moment abandoned the intent to obtain a patent for it.

In this connection, it is proper to make another remark. It is not a public knowledge of his invention that precludes the inventor from obtaining a patent for it, but a public use or sale of it. In England, formerly, as well as under our Patent Act of 1793, if an inventor did not keep his invention secret; if a knowledge of it became public before his application for a patent, he could not obtain one. To be patentable, an invention must not have been known or used before the application; but this has not been the law of this country since the passage of the act of 1836, and it has been very much qualified in England. *Lewis v. Marling*, 10 Barn. & C. 22. Therefore, if it were true that during the whole period in which the pavement was used the public knew how it was constructed, it would make no difference in the result.

It is sometimes said that an inventor acquires an undue advantage over the public by delaying to take out a patent, inasmuch as he thereby preserves the monopoly to himself

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for a longer period than is allowed by the policy of the law; but this cannot be said with justice when the delay is occasioned by a *bona fide* effort to bring his invention to perfection, or to ascertain whether it will answer the purpose intended. His monopoly only continues for the allotted period, in any event; and it is the interest of the public, as well as himself, that the invention should be perfect and properly tested, before a patent is granted for it. Any attempt to use it for a profit, and not by way of experiment, for a longer period than two years before the application, would deprive the inventor of his right to a patent.

The next question for consideration is, whether the defendants have infringed the patent of Nicholson, and on this question we entertain no doubt. The pavement put down by the defendants in the city of Elizabeth differs in nothing from that described by Nicholson in his patent, except in the form of the strips placed between the rows of blocks, and the nicks or grooves made in the blocks to fit them. In Nicholson's description, they are simply strips of board standing endwise on the foundation. The patent describes the strips as "So arranged as to form spaces of about one inch in thickness between the rows of principal blocks. The auxiliary strip may be about half the height of the principal blocks; but it must not be permitted to fill up the grooves permanently and entirely, when the pavement is completed, or to perform any part of the pavement." The strips used by the defendants are substantially the same as here described, and perform the same office. The only difference in their construction and application between the blocks is, that they are beveled, by being made wider at the top than at the bottom, the extra width of the top part being let into a notch or groove in the blocks. If they perform the additional office, of partially sustaining the pressure of the blocks and locking them together, they do not any the less perform the office assigned to them in Nicholson's pavement. Their peculiar form and application

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may constitute an improvement on his pavement, but it includes his.

It is objected that the blocks of the Elizabeth pavement have not parallel sides, as prescribed in Nicholson's patent, by reason of the notch or groove in the side, into which the strips are fitted; but this notch or groove does not take from the blocks their general conformity to the requisition of the patent. They are parallel-sided blocks, with a groove made in the lower part to receive the edges of the strips. The parallel-sided blocks described in Nicholson's patent were probably intended to distinguish them from such blocks as those described in Stead's patent, which were hexagonal and triangular in form; or those in Wood's patent, which were of a pyramidal shape, the opposite sides being at an angle with each other. As contra-distinguished from these, both the Nicholson blocks and those used by the appellants are properly denominated blocks with parallel sides.

The next subject for consideration is the form and principles of the decree rendered by the court below. The bill prayed a decree for damages and profits; but, as it was filed before the passage of the act of July 8, 1870, which first authorized courts of equity to allow damages in addition to profits, the court below correctly held that a decree for profits alone could be rendered. It is unnecessary here to enter into the general question of profits recoverable in equity by a patentee. The subject, as a whole, is surrounded with many difficulties, which the courts have not yet succeeded in overcoming. But one thing may be affirmed with reasonable confidence, that if an infringer of a patent has realized no profit from the use of the invention, he cannot be called upon to respond for profits; the patentee, in such case, is left to his remedy for damages. It is also clear that a patentee is entitled to recover the profits that have been actually realized from the use of his invention, although, from other causes, the general business of the defendant, in which

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the invention is employed, may not have resulted in profits; as where it is shown that the use of his invention produced a definite saving in the process of a manufacture. *Mowry v. Whitney*, 14 Wall. 434 [8 Am. & Eng. 506]; *Mevs v. Conover*, Bk. 23, L. ed. 1008 [p. 39 *ante*]. On the contrary, though the defendant's general business be ever so profitable, if the use of the invention has not contributed to the profits, none can be recovered. The same result would seem to follow where it is impossible to show the profitable effect of using the invention upon the business results of the party infringing. It may be added, that, where no profits are shown to have accrued, a court of equity cannot give a decree for profits, by way of damages, or as a punishment for the infringement. *Livingston v. Woodworth*, 15 How. 559. But when the entire profit of a business or undertaking results from the use of the invention, the patentee will be entitled to recover the entire profits, if he elects that remedy. And in such a case, the defendant will not be allowed to diminish the show of profits by putting in unconscionable claims for personal services or other inequitable deductions. *Rubber Co. v. Goodyear*, 9 Wall. 788 [8 Am. & Eng. 150]. These general propositions will hardly admit of dispute; and they will furnish us some guide in deciding the questions raised in this case.

Only the defendants have appealed; and the errors assigned by them on this branch of the case are the following:

1. "The court erred in decreeing that the complainants do recover of the defendants, the City of Elizabeth and George W. Tubbs, the sums set forth in the decree, because the master did not find that said defendants had made any profits, which failure to find was not excepted to by complainants, and because no proof was offered by complainants of any profits whatever made by said defendants."

2. "The court erred in finding that the profits received by the defendants were the fruits of the use of the devices described and claimed in the first and second claims of the

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Nicholson patent,—there being no proof of any advantage derived by the defendants from such use of the Nicholson devices, or was incident to the use of the devices of the Brocklebank & Trainer patent. The failure to specifically show such profits makes the recovery nominal.”

3. “The court erred in decreeing the whole amount of profits made by the New Jersey Wood Paving Company in the construction of the pavements referred to in the master’s report. Whereas, if any profits ought to have been decreed, they should have been confined to the amount of the license for a royalty which the complainants had been accustomed to receive, and was bound by the terms of their title to accept, from any party constructing such pavement in New Jersey.”

We will consider these assignments in order :

The first seems to be well taken. The party who made the profit by the construction of the pavement in question was the New Jersey Wood Paving Company. The City of Elizabeth made no profit at all. It paid the same for putting down the pavement in question that it was paying to the defendant in error for putting down the Nicholson pavement proper, namely : \$4.50 per square yard. It made itself liable to damages, undoubtedly, for using the patented pavement of Nicholson ; but damages are not sought or, at least, are not recoverable, in this suit. Profits only, as such, can be recovered therein. The very first evidence which the appellees offered before the master was, the contracts made between the city and the other defendants for the construction of the pavement ; and these contracts show the fact that the city was to pay the price named, and that any benefit to be derived from the construction of the pavement was to be enjoyed by the contractors.

It is insisted that the defendants, by answering jointly, admitting that they were jointly co-operating in laying the pavement, precluded themselves from making this defence. We do not think so. That admission is not inconsistent

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with the actual facts of the case, to wit: that this co-operation consisted of a contract for having the pavement made, on one side, and a contract to make it, on the other; and is by no means conclusive as to which party realized profit from the transactions. The complainants themselves, by their own evidence, showed that it was the contractors and not the city that realized it.

The appellant, Tubbs, is in the same predicament with the city. Several of the contracts were made in his name, it is true; but they were made in behalf of the New Jersey Wood Paving Company, for whose use and benefit the contracts were made and completed. Tubbs only received a salary for his superintendence.

The next assignment of error, based on the hypothesis that the profits received by the defendants were not the fruits of the use of Nicholson's invention, appears to us destitute of foundation. This matter is so fully and ably presented in the opinion of the Circuit Court as to require but little discussion from us. The Nicholson pavement was a complete thing, consisting of a certain combination of elements. The defendants used it as such, the whole of it. If they superadded to it the addition made to it by Brocklebank & Trainer, they failed to show that such addition contributed to the profits realized. The burden of the proof was on them to do this. The evidence, if it shows anything, tends to prove that the addition diminished the profits, instead of increasing them; but it could not have had much influence either way, inasmuch as the evidence shows that the profit made on this pavement was about the same as that made on the pavement of Nicholson, without the improvement. The appellants, however, obtained an allowance of nearly \$14,000 for the royalty paid by them for the use of the Brocklebank & Trainer patent. This allowance went so far in diminution of the profits recovered.

Equally without foundation is the position taken by the appellants, that other pavements, approaching in resem-

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blance to that of Nicholson, were open to the public, and that the specific difference between those pavements and Nicholson's was small, and that, therefore, the Nicholson patent was entitled to only a small portion of the profits realized. Nicholson's pavement, as before said, was a complete combination in itself, differing from every other pavement. The parts were so correlated to each other, from bottom to top, that it required them all, put together as he put them, to make the complete whole, and to produce the desired result. The foundation impervious to moisture; the blocks arranged in rows; the narrow strips between them for the purposes designated; the filling over those strips, cemented together, as shown by the patent, all were required. Thus combined and arranged, they made a new thing, like a new chemical compound. It was this thing, and not another, that the people wanted and required. It was this that the appellants used and, by using, made their profit, and prevented the appellee from making it. It is not the case of a profit derived from the construction of an old pavement together with a superadded profit derived from adding thereto an improvement made by Nicholson, but of an entire profit derived from the construction of his pavement as an entirety. A separation of distinct profit derived from Brocklebank & Trainer's improvement, if any such profit was made, might have been shown; but, as before stated, the appellants failed to show that any such distinct profit was realized.

We have looked over the various items claimed by the appellants by way of reduction of profits, and disallowed by the master and by the court below, and we are satisfied with the result which they reached. The gross profits of the work over actual expenses for material and labor were conceded to be \$123,610.78. The total deductions claimed before the master amounted to \$139,875.63, which would have been considerably more than sufficient to absorb the whole profits. The master and the court allowed deduc-

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tions to the amount of \$48,618.62, which reduced the profits to \$74,992.16, for which amount the decree was rendered. The deductions overruled and disallowed amounted to \$91,257.85. Of these, \$31,111.92 was a profit of twenty per cent. which the appellants claimed they had a right to add to the actual cost of lumber and other materials and labor. It is only necessary to state the claim to show its preposterousness. Other items were one of \$7,000 for salaries, and another of \$3,000 for rent, for a period of time that occurred after the work was completed. Another item was one of \$2,675.09 for the cost of a dock which the parties built on their own land; and another of \$25,000, paid for an interest in the Brocklebank & Trainer patent. As the appellants still hold these properties, we cannot well conceive what the purchase of them has to do in this account. They also claim \$15,241.33 for that amount abated from the assessments of some of their stockholders who owned lands along the streets paved. As this was a gratuity which they made to themselves, they cannot claim a deduction for it here. The last item was \$6,572.75, claimed to have been profits made upon other work, which were allowed to be included in these contracts. As this is not explained in any satisfactory way, we think the master did right in rejecting it.

We are entirely satisfied with the disposition made of these various items, and with the correctness of the decree, so far as the statement of the account is concerned.

But the appellants assign a third error. They insist that the appellee, as assignor of the Nicholson patent for the State of New Jersey (which was the ground of its title), was entitled to recover only thirty-one cents per square yard in any event, being limited to that charge for the use of the patent by the terms of the assignment; sixteen cents of which was to be paid to the proprietors, and fifteen to be retained by the appellee.

This matter is quite satisfactorily disposed of in the opinion of the court below. The stipulation was between third

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parties, and the appellants had no concern in it. It only applied, by its terms, to cases where, by reason of the decisions of the courts, or otherwise, it should be found impracticable for the appellees to obtain contracts for laying the pavement in any town or city, or where the work of constructing pavements should be required by law to be let under public lettings, open to general competition. The object was to secure as extensive a use of the pavement as possible, as thereby the emoluments of the proprietors would be increased. But the assignment gave to the appellee the exclusive right in the patent for the State of New Jersey. It did not prohibit the appellee from constructing the pavements itself, if it could obtain contracts for doing so, and making thereby any profit it could. There was no obstacle to its doing this in the City of Elizabeth. On the contrary, it did obtain from the city large contracts, and would have obtained more if the appellants had not interfered. There is nothing in this state of things which entitles the latter, after making large profits from the use of the invention, to refuse to respond therefor. It is not for them to say that the hands of the appellee are tied by its contract with its grantor. This would be to take advantage of their own wrong. Whatever bearing the stipulation in the assignment may have on the measure of damages, in an action at law, it affords no defence to the appellants when called upon to account for the profits which they have wrongfully made by pirating the invention.

We think there is no error in the decree of the Circuit Court, except in making the City of Elizabeth and George W. Tubbs accountable for the profits. As to them a decree for injunction only to prevent them from constructing the pavement during the term of the patent, should have been rendered; which, of course, cannot now be made. As to the New Jersey Wood Paving Company, the decree was in all respects correct. A decree for costs in the court below should be awarded against all the defendants.

Notes and Citations.

The decree of the Circuit Court, therefore, must be reversed, with costs, and the cause remanded to said court with instructions to enter a decree in conformity with this opinion.

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Notes :

2. A foreign patent must antedate the United States invention in order to invalidate it :

Cochrane v. Deener, 94 U. S. 781. [p. 288 *ante*.]

3. What is public use and sale :

Pennock v. Dialogue, 2 Pet. 1 [4 Am. & Eng. 217].

Shaw v. Cooper 7 Pet. 292 [4 Am. & Eng. 286].

McClurg v. Kingsland, 1 How. 202 [4 Am. & Eng. 382].

Gayler v. Wilder, 10 How. 477 [5 Am. & Eng. 188].

Coffin v. Ogden, 18 Wall. 120 [9 Am. & Eng. 125].

Bates v. Coe, 98 U. S. 31.

Egbert v. Lippman, 104 U. S. 333.

Worley v. Loker Tobacco Co., 104 U. S. 340.

Hall v. Macneale, 107 U. S. 90.

Manning v. Cape Ann Co., 108 U. S. 462.

Smith & Griggs Mnfg. Co. v. Sprague, 123 U. S. 249.

Andrews v. Hovey, 123 U. S. 267.

Andrews v. Hovey, 124 U. S. 694.

Foreign use :

Shaw v. Cooper, 7 Pet. 292 [4 Am. & Eng. 286].

O'Reilly v. Morse, 15 How. 62 [5 Am. & Eng. 483].

Roemer v. Simon, 95 U. S. 214.

Notes and Citations.

Act 1790, secs. 1 and 2; Act 1793, secs. 1 and 3; Act 1800, sec. 1; **Act 1836, sec. 6**; Act 1837, sec. 6; Act 1863, sec. 1; Act 1870, secs. 24, 26, 27, 28, 29, 30; R. S., secs. 4886, 4888, 4889, 4890, 4891, 4892.

Act 1836, sec. 7; Act 1870, secs. 31 and 41; R. S., secs. 4893 and 4903.

Act 1790, sec. 6; Act 1793, sec. 6; **Act 1836, sec. 15**; Act 1870, secs. 61 and 62; R. S., secs. 4920 and 4923.

Act 1839, sec. 7; Act 1870, sec. 54; R. S., sec. 4917.

Construed as to inventor's consent and allowance :

Andrews v. Hovey, 123 U. S. 267.

Andrews v. Hovey, 124 U. S. 694.

Patent in suit:

No. 11,491. Nicholson, S. August 8, 1854. Reissue No. 1583, December 1, 1863. Reissue No. 2748, August 20, 1867. Wooden Pavement.

OTHER SUITS ON SAME PATENT:

Nicholson Pavement Co. v. Hatch, 1868. 4 Sawy. 692; 3 Fish. 432.

Bigelow v. City of Louisville, 1869. 3 Fish. 602.

American Nicholson Pavement Co. v. City of Elizabeth, 1870. 4 Fish. 189.

Jenkins v. Pavement Co., 1870. 1 Abb. 567; 4 Fish. 201.

American Nicholson Pavement Co. v. Jenkins, 1872. 14 Wall. 452 [8 Am. & Eng. 516].

American Nicholson Pavement Co. v. City of Elizabeth, 1873. 6 Fish. 424; 3 O. G. 522.

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American Nicholson Pavement Co. v. City of Elizabeth, 1874. 1 Ban. & Ard. 439; 6 O. G. 764.

Cited:**IN SUPREME COURT IN:**

Egbert v. Lippman, 1881. 104 U. S. 333; Bk. 26 L. ed. 755.
Root v. L. S. & M. S. R. Co., 1882. 105 U. S. 189; Bk. 26 L. ed. 975.
Stow v. City of Chicago, 1882. 104 U. S. 547; Bk. 26 L. ed. 816.
Smith & Griggs Mufg. Co. v. Sprague, 1887. 123 U. S. 249; Bk. 37 L. ed. 141.
Andrews v. Hovey, 1887. 123 U. S. 267; Bk. 31 L. ed. 160.
Tilghman v. Proctor, 1888. 125 U. S. 136; Bk. 31 L. ed. 664.

IN CIRCUIT COURTS IN :

Draper v. Wattles, October, 1878. 3 Ban. & Ard. 618; 16 O. G. 629.
Campbell v. James, August, 1879. 17 Blatch. 42; 4 Ban. & Ard. 456; 8 Reporter, 455; 18 O. G. 979.
Burdett v. Estey, April, 1880. 19 Blatch. 1; 5 Ban. & Ard. 308; 3 Fed. Rep. 566; 10 Reporter, 519.
Campbell v. James, May, 1880. 18 Blatch. 92; 5 Ban. & Ard. 354; 2 Fed. Rep. 338; 18 O. G. 1111; 10 Reporter, 9.
Kirby v. Armstrong, February, 1881. 10 Biss. 135; 5 Fed. Rep. 801; 19 O. G. 661; 11 Reporter, 451.
Campbell v. Mayor of New York, November, 1881. 20 Blatch. 67; 9 Fed. Rep. 500; 20 O. G. 1817; 12 Reporter, 770.
Emery v. Cavanagh, June, 1883; 17 Fed. Rep. 242; 16 Reporter, 100.
Maier v. Brown, September, 1883. 17 Fed. Rep. 736; 16 Reporter, 585.
Steam Stone Cutter Co. v. Sheldons, October, 1884. 22 Blatch. 484; 21 Fed. Rep. 875.

Notes and Citations.

Railway Register Mnfg. Co. v. Broadway and Seventh Ave. R.
R. Co., December, 1884. 22 Fed. Rep. 655 ; 30 O. G. 180.
Innis v. Oil City Boiler Works, January, 1885. 22 Fed. Rep. 780 ;
30 O. G. 998.
Duffy v. Reynolds, August, 1885. 24 Fed. Rep. 855 ; 33 O. G.
621.
Railway Register Mnfg. Co. v. Broadway and Seventh Ave. R.
R. Co., February, 1886 ; 26 Fed. Rep. 522 ; 34 O. G. 921.
Celluloid Mnfg. Co. v. Am. Zylonite Co., March, 1886. 23 Blatch.
444 ; 26 Fed. Rep. 692 ; 35 O. G. 135.
Reed v. Lawrence, October, 1886. 29 Fed. Rep. 915.
Shaver v. Skinner Mnfg. Co., January, 1887. 30 Fed. Rep. 68 ; 41
O. G. 232.
Filley v. Littlefield Stove Co., April, 1887. 30 Fed. Rep. 434.
Shannon v. Bruner, February, 1888. 33 Fed. Rep. 871.

IN STATE COURTS IN :

Maurice v. Devol, December, 1883. 23 W. Va. Rep. 247.
Freeman v. Freeman, June, 1886. 2 New Eng. Rep. 520.

IN TEXT-BOOKS :

2 Abb. Pat. Law, 1886, pp. 62, 323, 324, 333, 335, 338, 366, 400,
451, 455.
Merwin on Pat. Invt., 1883, pp. 162, 491, 640, 718.
Walker on Pats., 1883, pp. 46, 62, 63, 65, 267, 296, 404, 485, 486,
487, 488, 490, 491, 501, 503.

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INDEX DIGEST

OF

DECISIONS OF THE SUPREME COURT OF THE UNITED STATES IN PATENT CASES REPORTED IN THIS VOLUME.

	PAGE.
Abandoned Experiment.	
See Particular Patents, 18.	
Abandonment.	
1. Cummings applied for a patent of April 12, 1855. His application was rejected twice, and on February 3, 1856, a third rejection followed a reconsideration. From that time till the patent was finally granted the applicant was in ill health and poor. He did not withdraw his application, nor acquiesce in the action of the Patent Office. He made frequent applications to his friends for advances to enable him to prosecute his application. In February, 1859, an attempt was made for an appeal to the board, but the Commissioner refused to allow it. On March 1, 1864, he presented a petition for the grant of a patent for the same invention. The patent was granted on June 7, 1864. The invention went into public use in 1859. <i>Held</i> : (Justices BRADLEY, MILLER and FIELD dissenting) that the proceeding to obtain a patent was a continuous one from 1855 until it was granted; that the application of 1855 not being severable from that of 1864 there was no foundation for the allegation that the invention was abandoned to the public, and that it was in public use or on sale for more than two years prior to the inventor's application. There was no abandonment, actual or constructive. <i>Smith v. Goodyear Dental Vulcanite Co.</i>	1
2. An abandonment of an invention to the public may be evinced by the conduct of the inventor at any time, even within the two years named in the law (Act 1836, secs. 6, 7 and 15, and Act 1839, sec. 7). No such consequence will necessarily follow from the invention being in public use or on sale with the inventor's consent and allowance at any time within two years be-	

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fore his application ; but if the invention is in public use or on sale prior to that time, it will be conclusive evidence of abandonment. *Elizabeth v. Pavement Co.* 514
 See Construction of Statutes, 1 ; Estoppel, 5 ; Particular Patents, 14, 17, 19.

Account.

1. In settling an account for an infringement the question is not what profits the infringer has made in his business or from his manner of conducting it, but what advantage he has derived from the use of the infringed invention. *Cawood Patent* 235

Aggregation.

See Particular Patents, 10.

Appeal.

1. Where it is discretionary with a court of equity whether it will first send a case to be tried at law, and it exercises its discretion to decide the case upon its merits without the aid of a jury of any sort, such action is not a ground of appeal. *Cochrane v. Deener* 288
2. But if the appellate court were convinced that the case was not properly decided, and could not be properly decided without such a reference, it might, in the exercise of its own discretion, remand it to the court below for that purpose. *Cochrane v. Deener* 288
3. On appeal, questions not involved in the assignment of errors will be passed over without examination. *Roe-mer v. Simon* 348

Application.

Continuing application.
 See Abandonment, 1.

Art.

See Process, 2.

Assignment.

1. Inventions may be assigned before they are patented. *Cammeyer v. Newton* 98

Assignment of Errors.

See Appeal, 3.

Bill in Equity.

See Trial out of Equity, 1.

Burden of Proof.

1. The burden of proving infringement is upon the complainants. *Fuller v. Yentzer* 138
 2. The burden of proof is upon the complainant to show that the defendant has infringed the patent under which he claims. *Fuller v. Yentzer* 176
 3. Having proved the alleged infringement, the burden of proof is cast upon the respondents to show that the patent is invalid, unless the patent is materially defective in form. *Roemer v. Simon* 348
 4. Where infringers also operating under a patent alleged as cause of error a failure to specifically show the profits arising from the respective devices, *held* that the burden of showing it was on them. *Elizabeth v. Pavement Co.* 514
- See Evidence, 1.

Case Considered.

1. The case of *Hotchkiss v. Greenwood* (11 How. 248 [5 Am. Eng. 240]), considered. That case does decide that employing one known material in place of another is not invention if the result be only greater cheapness and durability of the product. But this is all. It does not decide that no use of one material in lieu of another in the formation of a manufacture can, in any case, amount to invention, or be the subject of a patent. If such a substitution involves a new mode of construction, or develops new uses and properties of the article formed it may amount to invention. The substitution may be something more than formal. It may require contrivance in which case the mode of making it would be patentable or the result may be the production of an analogous, but substantially different, manufacture. *Smith v. Goodyear Dental Vulcanite Co.* 1

Change in Form.

See Invention, 4.

Change in Size.

See Invention, 4; Particular Patents, 23.

Change of Material.

1. The use of one material instead of another in constructing a known machine is, in most cases, so obviously a matter of mere mechanical judgment, and not of invention, that it cannot be called an invention unless some new and useful result, as increase of efficiency or a decided

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saving in the operation, be obtained. But where there is some such new and useful result, where a machine has acquired new functions and useful properties, it may be patentable as an invention, though the only change made in the machine has been supplanting one of its materials by another. This is true of all combinations, whether they be of materials or processes. *Smith v. Goodyear Dental Vulcanite Co.* 1

Claim.

1. Where the claim immediately follows the description of the invention, it may be construed in connection with the explanations given in the description, and if the claim contains words referring back to the specification, it cannot properly be construed in any other way. *Fuller v. Yentzer* 138
2. It being understood that a result is not patentable, claims which read "forming one, two or more creases in cloth by means of, etc.," and "marking a line on the surface of cloth or other material sewed in a sewing machine, by means of, etc.," construed to be for the described apparatus for producing the results named. *Fuller v. Yentzer* 138
3. The claims in a patent are to be considered as distinct from the description contained in the specification, and as representing what part of the matter described the patentee claims as his invention, and for which he asks protection. *Merrill v. Yeomans* 203
4. While it is essential that the specification should describe such matters, both old and new, as are necessary to an understanding of the invention, the claim must contain a distinct and specific statement of what the applicant claims to be new and of his invention. *Merrill v. Yeomans* 203
5. The inventor of an article is entitled to protection therefor, however produced, and there is no reason why an applicant for a patent, if he had in his mind a claim for the article produced, should limit his claim by a description of the process. *Merrill v. Yeomans* 203
6. The interests of the public demand that the claims in a patent should clearly and distinctly define and limit the actual invention claimed by and secured to the patentee. *Merrill v. Yeomans* 203
7. The courts have no right to enlarge a patent beyond the scope of its claim as allowed by lawful authority. *Key-stone Bridge Co. v. Phoenix Iron Co.* 364

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8. When the terms of a claim in a patent are clear and distinct (as they always should be) the patentee in a suit brought for infringement is bound by it. He can claim nothing beyond it. *Keystone Bridge Co. v. Phoenix Iron Co.* 364
 See *Estoppel*, 2, 5; *Patent Office*, 1; *Reissue*, 2; *Result*, 1.

Collusive Decree.

See *Motion to Vacate Decree*, 2.

Combination.

1. A patented combination is not infringed by a machine in which one of the ingredients is omitted. *Dunbar v. Meyers* 59
2. The rights of a patentee for a mere combination of old ingredients are not infringed unless it appears that the alleged infringer made, used, or sold the entire combination. *Fuller v. Yentzer* 138
3. A patent may be granted for a new combination of old elements or ingredients if it produces a new and useful result; but, in such case the invention consists merely in the new combination, and the patent therefor is not infringed by a substantially different combination, even though it includes the exact same elements or ingredients. *Fuller v. Yentzer* 138
4. The infringement of a patent is not avoided by the substitution for one member of the combination of an old ingredient performing the same function, and well known at the date of the patent as a proper substitute for the one omitted. But the rule is otherwise, if the ingredient substituted is a new one, or performs a substantially different function, or was not known at the date of the patent as a proper substitute for the one omitted. *Fuller v. Yentzer* 176
5. A combination is always an entirety. In such cases patentee cannot abandon a part and claim the rest, nor can he be permitted to prove that a part is useless and therefore immaterial. He must stand by his claim as he has made it. If more or less than the whole of his ingredients are used by another, such party is not liable as an infringer, because he has not used the invention or discovery patented. With the change of elements, the identity of the product disappears. *Schumacher v. Cornell* 443
 See *Change of Material*, 1; *Improvement*, 2; *Particular Patents*, 1, 6, 8, 15, 19, 20, 28; *Specification*, 2.

Commissioner.

See Patent Office, 1.

Constitution.

1. Private property, the Constitution provides, shall not be taken for public use without just compensation, and it is clear that the provision is as applicable to the Government as to individuals, except in cases of extreme necessity in time of war, and of imminent and impending public danger. *Cammeyer v. Newton* 98

Construction of Patents.

1. The courts are inclined to give a patentee the benefit of a liberal construction of the patent, and when it appears that a valuable invention has really been made, to uphold that which was invented, and which comes within any fair interpretation of the claim; but where there were three inventions described in the patent, the apparatus, the process, and the product, and but two claims made to the apparatus and the process respectively, each of which was valid and for the invention described therein, the court refused to give effect to the third invention, which the patentee has failed to claim, and *held*, if the patentee was entitled to a patent for the product, his legal remedy was by reissue. *Merrill v. Yeomans* 203
2. Where the specification and claim in both of complainant's patents clearly indicated that certain characteristic features were regarded as of the essence of the invention, the court declined to enlarge the scope of the patents beyond what was thus explicitly set forth. *Key-stone Bridge Co. v. Phoenix Iron Co.* 364

See Disclaimer, 2, 3.

Construction of Statutes.

1. Act 1839, sec. 7, "purchase, sale or prior use" is in the disjunctive "for more than two years" means earlier than two years prior. It follows that a single instance of sale or use by the patentee, may, under the circumstances, be fatal to the patent. *Consolidated Fruit Jar Co. v. Wright* 46
2. Since the passage of the act of July 8, 1870, the regulation in equity suits is, that defences such as are described in section 61 of that act, may be pleaded in any equity suit for relief against an alleged infringement, and that proof of the same may be given upon like notice in the answer of the respondent, and with like effect. *Roemer v. Simon* 348

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- Act 1836, §6, see Abandonment, 2; Prior Public Use or Sale, 1.
- “ §7, see Abandonment, 2; Prior Public Use or Sale, 1.
- “ §15, see Abandonment, 2; Prior Public Use or Sale, 1.
- Act 1839, §7, see Abandonment, 2; Particular Patents, 14;
Prior Public Use or Sale, 1.
- Act 1870, see Foreign Patent, 1.
- R. S. §760, see Supreme Court of District of Columbia, 1.
- §764, see Supreme Court of District of Columbia, 1.

Continuing Application.

- See Abandonment, 1; Particular Patents, 17.

Contract.

- 1. A contract between appellee and its assignor as to charges relating to a patent, *held* a stipulation between third parties with which appellants' infringer had no concern and of which they could not avail themselves in reduction of profits. *Elizabeth v. Pavement Co.* . . . 514
- See Estoppel, 4.

Damages.

- 1. The complainant was found entitled to nominal damages only, the burden of proof being upon him, and it appearing that the proof was meager and indefinite, but four machines made, no established license fee, the profits made being due in part to inventions covered by other patents, and no distinction made between profits accruing from the use of complainant's invention and that from the other inventions and manufacturer's profits. *Robertson v. Blake* 286

Date.

- Date of English Patent.*
- See English Patent, 1.

Delay.

- Delay in Filing Disclaimer.*
- See Disclaimer, 1.

Disclaimer.

- 1. A disclaimer properly made, attested and recorded, becomes a part of the specification to the extent of the interest of those who make it, but will not affect any action pending at the time of its being filed, except as to unreasonable neglect or delay in filing it. *Dunbar v. Meyers* 59
- 2. The disclaimer must be taken into account in construing the patent, except when its effect is to enlarge the

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nature of the invention and prejudice the rights of the respondent. <i>Dunbar v. Meyers</i>	59
3. Matters properly disclaimed cease to be a part of the invention, and render the same as if such matters had never been included. <i>Dunbar v. Meyers</i>	59

Duplication.

See Particular Patents, 1.

Employer and Employee.

1. Public employment is no defence to the employé for having converted the private property of another to the public use without his consent, and without just compensation. *Cammeyer v. Newton* 98

English Patent.

1. Where the English provisional specification of the alleged prior patent was filed prior to the date of filing of that of the United States patent, but was completed subsequent thereto, *held* that the invention was not patented in England, so as to anticipate the invention patented in this country, until the completed specification had been filed. The date of filing the provisional specification was not to be considered. *Smith v. Goodyear Dental Vulcanite Co.* 1

Equivalents.

1. The substantial equivalent of a thing is the same as the thing itself. *Machine Co. v. Murphy* 494
2. The substitution of a known equivalent for one of the ingredients of a patented invention is not a good defence for an infringer; but, if the ingredient was a new one, or performed a substantially different function, or was not known at the date of the patent as a proper substitute for the one omitted, there is no infringement. *Fuller v. Yentzer* 138

See Combination, 4.

Estoppel.

1. A judgment of a court of competent jurisdiction, upon a question directly involved in one suit, is conclusive as to that question in another suit between the same parties; but to this operation of the judgment it must appear, either upon the face of the record, or be shown by extrinsic evidence, that the precise question was raised and determined in the former suit. If there be any uncertainty on this head in the record, the whole subject-matter of the action will be at large and open

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to a new contention, unless this uncertainty be removed by extrinsic evidence showing the precise point involved and determined. To apply the judgment, and give effect to the adjudication actually made, when the record leaves the matter in doubt, such evidence is admissible. <i>Russell v. Place</i>	226
2. In an action at law for damages for the infringement of a patent for an alleged new and useful improvement in the preparation of leather, which patent contained two claims; one for the use of fat liquor generally in the treatment of leather, and the other for a process of treating bark-tanned lamb or sheep skin, by means of a compound composed and applied in a particular manner, the declaration alleged, as the infringement complained of, that the defendants had made and used the invention, and caused others to make and use it, without averring whether such infringement consisted in the simple use of fat liquor in the treatment of leather, or in the use of the process specified. <i>Held</i> , that the judgment recovered in the action does not estop the defendant in a suit in equity by the same plaintiff, for an injunction and an accounting for gains and profits, from contesting the validity of the patent, if not appearing by the record, and not being shown by extrinsic evidence, upon which claim the recovery was had. The validity of the patent was not necessarily involved, except with respect to the claim which was the basis of the recovery; a patent may be valid as to a single claim, and invalid as to the others. <i>Russell v. Place</i>	226
3. If, upon the face of a record, anything is left to conjecture as to what was necessarily involved and decided, there is no estoppel in it when pleaded, and nothing conclusive in it when offered as evidence. <i>Russell v. Place</i>	226
4. An agreement with a complainant not to manufacture the device of a certain firm, does not work an estoppel, it being a controverted fact as to the identity of such device with the patented device alleged to be infringed. <i>Roemer v. Simon</i>	348
5. Upon suits brought patentees cannot show that their invention is broader than the terms of their claim; or if broader they must be held to have surrendered the surplus to the public. <i>Keystone Bridge Co. v. Phoenix Iron Co.</i>	364
See Claim, 8; Combination, 5.	

Evidence.

1. The patent itself is *prima facie* evidence that the patentee was the first inventor, at least it casts upon him who denies it the burden of sustaining his denial by proof. *Smith v. Goodyear Dental Vulcanite Co.* 1
 2. The patent if introduced in evidence by the complainant, affords a *prima facie* presumption that the supposed inventor is the original and first inventor of the improvement. *Cammeyer v. Newton* 98
 3. Where the patent described in the bill of complaint is introduced in evidence, the patentees or assignees are presumed to be the original and first inventors of the described improvement. *Roemer v. Simon* 348
- See Abandonment, 2; Prior Foreign Use, 1.

Experimental Use.

1. In what an experimental use may consist as distinguished from a public use or being on sale within the meaning of the law. *Elizabeth v. Pavement Co.* 514
- See Particular Patents, 19; Prior Public Use or Sale, 1.

Foreign Patent.

1. Where it was shown that the invention covered by the domestic patent was actually made before the date of the prior French patent, *held* that by act of 1870, a foreign patent in order to invalidate an American patent must antedate the invention patented. *Cochrane v. Deener* 288
 2. A foreign patent or other foreign printed publication describing an invention is no defence to a suit upon a patent of the United States, unless published anterior to the making of the invention or discovery secured by the latter, provided that the American patentee, at the time of making application for his patent, believed himself to be the first inventor or discoverer of the thing patented. *Elizabeth v. Pavement Co.* 514
- See English Patent, 1; Particular Patent, 17.

Form.

1. Where form is of the essence of the invention, it is necessarily material; and if the same object can be attained by a machine different in form where the form is inseparable from the successful operation of the instrument, there is no infringement. *Werner v. King* . . 419
2. Except where form is of the essence of an invention it has but little weight in determining the question of infringement. It is necessary to look at the mode of op-

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eration and at the result, as well as at the means by which the result is attained. <i>Machine Co. v.</i> <i>Murphy</i>	494
See Particular Patents, 7, 11.	

Government Officer

See Constitution, 1; Employer and Employé, 1; Private
Property, 1.

Judgment.

See Estoppel, 1, 2, 3.

Measure of Damages.

See Account, 1.

Identity.

1. One device is substantially the same as another if it performs substantially the same functions in substantially the same way to produce the same result, and this though they differ in name, form, or shape. *Machine Co. v. Murphy* 494

See Combination, 5; Estoppel, 4.

Identity of Original and Reissue.

See Reissue, 1.

Improvement.

1. The question whether or not an alleged improvement is or is not patentable is, in an equity suit, a question for the court. *Dunbar v. Myers* 59
2. A patent for improvements in an apparatus may be valid if they are new, and accomplish a new and useful result, even though all the elements of the same are old, provided the combination or arrangement of such elements is new and of such a character that it involved invention to construct the same. *Fuller v. Yentzer* . 176
3. When an original machine and an improvement upon it are both patented, neither patentee can use what does not belong to him without the requisite authority from the owner. *Robertson v. Blake* 266

See Specification, 1.

Inchoate Right.

See Assignment, 1.

Infringement.

1. Where the invention is embodied in a machine, the question of infringement is best determined by a compari-

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- son of the machine or apparatus constructed or used by the respondent with a mechanism described in the specification of complainant's patent. *Fuller v. Yentzer* 138
2. It is not only necessary to an infringement that the arrangement which infringes should perform the same service or produce the same effect, but *it must be done in substantially the same way*. *Werner v King* 419
- See Burden of Proof, 1, 2; Combination, 1, 2, 3, 4, 5; Equivalent, 2; Form, 1, 2; Improvement, 3; Invention, 3; Particular Patents, 4, 5, 9, 11, 25, 26, 28, 29; Process, 1.

Infringer.

Infringer operating under Patent.
See Burden of Proof, 4.

Invention.

1. Invention or discovery constitutes the foundation of the right to obtain a patent, and nothing short of this will support it. *Dunbar v. Meyers* 59
 2. The degree of skill and ingenuity required in making or applying an alleged improvement, must be more than are possessed by an ordinary mechanic acquainted with the business in order to constitute invention. *Dunbar v. Meyers* 59
 3. Because the invention has been used in an imperfect condition, or altered slightly in one particular without serious loss, it is no proof that it was no invention, or that the use of it in its altered condition was no infringement. *Cawood Patent* 235
 4. Where certain properties are known to belong generally to classes of articles, there can be no invention in putting a new species of the class in a condition for the development of its properties similar to that in which other species of the same class have been placed for similar development; nor can the changed form of the article from its condition in bulk to small particles by breaking or other similar mechanical means make it a new article in the sense of the patent law. *Glue Co. v. Upton* 458
- See Change of Material, 1; Combination, 3; Improvement, 2; Particular Patents, 1, 10, 17, 23.

Assignment of invention prior to patenting.
See Assignment, 1.

Inventor—First and Original.

See Evidence, 1, 2, 3; Prior Foreign Use, 1.

Joinder of Inventions.

See Validity, 1.

Jurisdiction.

1. The jurisdiction of the circuit courts in cases arising under the patent and copyright laws is not changed by the Revised Statutes, and consequently the original cognizance of the circuit courts sitting as courts of equity in patent cases is retained. *Cochrane v. Deener*. 288

Mechanical Skill.

See Invention, 2.

Motion to Amend Answer.

See Notice, 2.

Motion to Vacate Decree.

1. Where the decision on a patent was made the basis of applications for injunctions against third parties in the Circuit Court, and it appeared that the case on the part of the appellees was very imperfectly presented in consequence of conditional arrangements with appellants, a motion to vacate the decree on the ground of collusion was refused, but it was *held* that third parties who had not been heard should not be concluded from having a further hearing in a future case. *Cochrane v. Deener* 396
2. While the Supreme Court would not hesitate to set aside a decree collusively obtained, the proof ought to be very clear to induce it to do this at the instance of strangers to the suit, though incidentally affected by the decision of questions involved. *Cochrane v. Deener*. 396

Nominal Damages.

See Damages, 1.

Notice.

1. Parties defendants sued at law for infringement are not allowed to set up the defence of a prior invention, knowledge, or use of the thing patented, unless written notice thereof is given thirty days before the trial. Such notice must state the names of the patentees and the dates of their patents alleged to have been invented, and the names and residences of the persons alleged to have invented or to have had the prior knowledge of the thing patented, and where and by whom it had been used. *Roemer v. Simon* 348

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2. The respondents having given due notice of the defence of prior invention and use, stating the names and residences of the persons having the prior knowledge, and where and by whom the alleged invention has been used, added further that it had been known to and used by others to them unknown, and prayed leave that when discovered they might be permitted to insert and set forth their names in the answer: *Held*, that on motion to insert, in accordance with the notice, and no objection made, the court was justified in entering the additional names and residences *nunc pro tunc*.
Roemer v. Simon 348
 See Construction of Statutes, 2.

Novelty.

1. That the omission of certain elements in a prior patented machine might enable a mechanic to alter and employ the remnant like the infringed machine, is no test of the novelty of the latter, this is to be determined by the question whether the information necessary to construct and use the latter machine can be read out of the prior specification, by a mechanic skilled in the particular art to which the alleged anticipated machine relates. *Cawood Patent* 235
2. Commercial and patentable novelty distinguished. *Glue Co. v. Upton* 458
 See English Patent, 1; Foreign Patent, 1; Notice, 1; Particular Patents, 2, 10, 16, 23.

Particular Patents.

1. It appearing that one deflecting plate, in combination with a circular saw, was old, and that it required only mechanical skill to apply one to the opposite side: *held*, that claim 1 of the improvement, letters patent No. 10,965, Meyers and Eunscon, May 23, 1854. *Sawing Machine*. Described as the employment or use of two deflecting plates, one placed on each side of the circular saw, for the purposes set forth in the specification, is void, because it does not constitute a patentable invention, and *held* that the 4th claim was not infringed, respondents having omitted one element of the combination claimed. *Dunbar v. Meyers* 59
2. Letters patent No. 15,687, J. D. Cawood, September 9, 1865, Anvil (1 Wall. 491 [7 Am. & Eng. 202]), further construed, *held* novel and not anticipated by the insufficient description in the prior English patent to

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- Church of 1846: the claim as limited in view of the state of the art, *held* not infringed by the Beebee & Smith, the Bayonet and the Michigan Southern machines, but infringed by the Whitcomb, Etheridge and Illinois Central machines. Cawood Patent 235
3. The words "or in any other convenient manner" construed to mean, by means adapted to the work the machine is intended to perform. Cawood Patent . . . 235
4. Letters patent No. 20,542, granted Eli W. Blake, for a Stone-Breaker, June 15, 1858, reissue No. 2,145, January 9, 1866, and extended June 15, 1872, *held* not anticipated by the earlier patent to Hobbs & Brown, No. 6,690, September 4, 1849, for "Improvements in the application of well known mechanical means for the purpose of crushing ice," and to Hamilton, No. 10,365, January 3, 1854, an additional improvement No. 124, May 22, 1855, for "crushing and grinding quartz or other substances," they not containing any of the essential elements of Blake's invention: *held* that it was infringed by the substitution for one part of the operating mechanism, of an equivalent for the omitted element. Robertson v. Blake 266
5. Claim 1 of letters patent No. 24,734, William Goodale, July 12, 1859. Paper Bag Machine, for a weighted knife with five planes or faces, which descends by gravity upon a flat continuous paper web and severs a peculiar outline-blank that folds into a bag without further cutting, *held* infringed by a stationary serrated-edged knife of substantially the same form fixed to the machine-bed, and which cuts the same shaped blank from the web passing above by conjoint action with a quick descending striker that gives the paper a vertical blow, directly in advance of the edge of the knife, the knife and the striker operating together to perform the same function as that performed by the complainant's machine by the ascent and descent of the cutter. Machine Co. v. Murphy 494
6. The claims of letters patent No. 28,633, H. W. Fuller, June 5, 1860, Marking Cloth for Sewing Machines, construed to be for a combination of old elements, and not for a result, the distinct features being the elevated bar projecting out of the frame attached to the presser-foot, the described spring arm, the bar projecting out from the needle-arm with the described points and the bed-plate on which they strike; *held* not infringed by the apparatus of patent No. 113,610, since

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none of the devices employed in one can be substituted for those of the other, so as to render the apparatus operative to effect the described result without reconstruction and invention. <i>Fuller v. Yentzer</i>	138
7. Claim 1 of letters patent No. 34,183, Linville & Piper, January 14, 1862, Iron Truss for Bridges for "the construction of the lower chords of truss bridges of series of <i>wide and thin</i> drilled eye-bars 2 C, C, applied <i>on edge</i> between ribs S, S, on the bottoms of the posts," etc., <i>construed</i> and <i>held</i> that the form of the chords is made material and the claim is not infringed by defendant's chords of cylindrical form. <i>Keystone Bridge Co. v. Phoenix Iron Co.</i>	364
8. Letters patent No. 37,319, Wm. F. Cochrane, January 6, 1863, Bolting Flour, and relating specially to the pump, <i>held</i> not infringed; because while defendant's device may be the equivalent of the pump in Cochrane's in the general combination with other elements, yet, when taken by themselves as separate pieces of machinery, they may not be the same, and the use of one is not the infringement of a patent for the other. <i>Cochrane v. Deener</i>	288
9. Letters patent No. 37,320, Wm. F. Cochrane, January 6, 1863, Bolting Flour, <i>held</i> not infringed. <i>Cochrane v. Deener</i>	288
10. Letters patent No. 37,941, granted William M. Welling, March 17, 1863, Martingale Ring, <i>construed</i> to be for a product, viz.: A martingale ring, consisting of a metal ring enveloped in a composition ring of artificial ivory or similar material. <i>Held</i> to be a case of aggregation and in view of the fact that the dies employed to complete the solidification and ornamentation of the ring form no essential part of the patented invention, and since metal rings enveloped in plastic compositions and the particular composition used by the patentee (artificial ivory) are both old in the art, the patent is void for lack of novelty and of invention. <i>Rubber-Coated Harness-Trimming Co. v. Welling</i>	479
11. Claim 3 of letters patent No. 50,723, Linville & Piper, October 31, 1865, Wrought Iron Bridge for "the use for the lower chords of truss frames of <i>wide and thin</i> rolled bars with enlarged ends, formed by upsetting the iron, when heated, by compression into molds of the required shape, for the purpose of increasing the density," etc., <i>construed</i> to be a claim for a particular product made by a particular process and applied to a particular use;	

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<i>held</i> not infringed by defendant's cylindrical bars. Keystone Bridge Co. v. Phoenix Iron Co.	364
12. Prior knowledge and use of the device patented to Wm. Roemer in letters patent No. 56,801, July 31, 1866, Traveling Bags, <i>held</i> sufficiently established by the testimony of three witnesses. Roemer v. Simon . . .	348
13. The claim in letters patent No. 90,284, J. Merrill, May 18, 1869, Hydrocarbon Oil, to "the above described new manufacture of the deodorized heavy hydrocarbon oils suitable for lubricating and other purposes, free from the characteristic odors of hydrocarbon oils, and having a slight smell like fatty oil, from hydrocarbon oils, by treating them substantially as hereinbefore described," <i>construed</i> and <i>held</i> that the word "manufacture" may be used to express the process or the product thereof, but when taken in connection with the words "by treat- ing them substantially as is hereinbefore described," it renders the claim in effect to the new mode of manufac- turing hydrocarbon oils by treating them as hereinbe- fore described, and not for the product. Merrill v. Yeo- mans	203
14. Letters patent No. 102,913, J. L. Mason, May 10, 1870, Fruit Jar. <i>Held</i> abandoned by sale or use for more than two years prior to application for patent, Act 1839, sec. 7. Consolidated Fruit Jar Co. v. Wright	46
15. Claim 2, of reissued letters patent No. 1,515, P. Dennis, August 4, 1863, (original patent No. 19,412, February 23, 1858.) Cultivator for "the combination with the beam, A, and the mold-board, B, with the adjustable wheel, F, arranged and operating substantially as used for the purposes specified," <i>construed</i> and <i>held</i> that the adjustable wheel is the important feature of the claim and is not infringed by defendant's plow in which this element is absent. Eddy v. Dennis	400
16. Claim 2, for "the inclined mold-board, B, formed and mounted substantially as described, and constructed highest at its outer edges, so as to form on each side of the standard, A, a recess, c, through which recess a por- tion of the earth may, after rising upon the mold-board descend into the furrow at the rear of the plow," <i>con- strued</i> to provide for a cut or carved out recess for the purpose intended and <i>held</i> wanting in novelty. Eddy v. Dennis	400
17. The claim of the Cummings reissued letters patent, No. 1,904, March 31, 1865, (original patent No. 43,009, June 7, 1864,) "The plate of hard rubber or vulcanite,	

or its equivalent, for holding artificial teeth, or teeth and gums substantially as described." *Construed* to be a new product, a new article of manufacture, made in a defined manner, the process being made by the claim as much a part of the invention as the materials of which the product is composed, consisting of a plate of hard rubber with teeth or teeth and gums, secured thereto, by embedding the teeth and pins in a vulcanizable compound, so that it shall surround them while it is in a soft state, before it is vulcanized, and so that when it has been vulcanized, the teeth are firmly and inseparably secured in the vulcanite, and a tight joint is effected between them, the whole consisting of but one piece, and *held* that devising and forming such a manufacture by such a process and of such materials was invention, although sets of artificial teeth had been previously mounted upon bases of other materials, the materials themselves were old, the steps in the process not all new, and the process of vulcanizing and of forming a plate by the use of molds were old, *held* not anticipated by an English provisional application filed prior to the domestic application but completed later; neither by an abandoned experiment; is for the same invention as the original and *held* that Cummings' application was a continuing one and the invention not abandoned by public use or sale pending such application. *Smith v. Goodyear Dental Vulcanite Co.* 1

18. Casting sets of teeth on a tin base by a process similar to the process described in the complainant's patent was not an anticipation of the invention, it being shown that vulcanite may be used by dentists as a base for artificial teeth in many ways that could not be accomplished by tin, and that, therefore, the cast tin base was not substantially the same product as the Cummings manufacture. The cast tin base *held* in view of its defects, to have been an abandoned experiment, although several sets had been made. *Smith v. Goodyear Dental Vulcanite Co.* 1

19. Reissued letters patent No. 2,748, S. Nicolson, August 20, 1867, (original No. 11,491, of August 8, 1854,) Wooden Pavement, *construed* to be for a combination and *held* not anticipated by an English patent published subsequent to the date of his invention, but prior to the date of his patent; *held* not abandoned by a public experimental use made six years prior to his application and is infringed by the pavement con-

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- structed under letters patent No. 65,786, Brooklebank & Trainer, January 12, 1869, Wooden Pavement. Elizabeth v. Pavement Co. 514
20. Reissued letters patent No. 3,000, G. E. King, June 23, 1868, (original No. 62,492, February 26, 1867,) Fluting Machine, for a device for puffing fluted fabric, consisting of a double plated segment of a hollow cylinder, with its arch upward, between the guide plates of which the material passes to the ordinary grooved fluting rolls beyond, *held* not infringed by a spring-pressed detent or finger operating above and in conjunction with a smooth flat plate, over which the material is fed to the rolls, made under letters patent No. 134,621, R. Werner, January 7, 1873, Fluting Machine. The two devices operate on different principles, and are in no sense mechanical equivalents unless complainant claims every method by which a redundancy of material is presented to the rolls for puffing. This he does not do, and if he did, the claim would be fatal. Werner v. King 419
21. Reissued letters patent No. 3,218, I. M. Rose, December 1, 1868, (original patent No. 40,084, September 22, 1863,) Marking Cloths in Sewing-Machines, *held* not anticipated by letters patent No. 26,633, H. W. Fuller, June 5, 1860, Marking Cloths in Sewing-Machines, which is for a different invention. Fuller v. Yentzer. 176
22. A claim in reissued letters patent No. 3,218 December 1, 1868, (original patent No. 40,084, I. M. Rose, September 22, 1863,) Marking Cloths in Sewing-Machines, for a "tuck-creasing mechanism, such as described, having its upper and lower parts connected, and together adjustable as to its relations with the needle of a sewing-machine, and operated by the sewing-machine as set forth," *held* not infringed by every form of mechanism by which a creaser is attached or adjusted to a sewing-machine, by which unity of adjustment is accomplished, and is not infringed by apparatus constructed under patent No. 127,287, E. S. Yentzer, May 28, 1872, Tuck Marker. Fuller v. Yentzer 176
23. The claim of reissued letters patent No. 4,072, E. Goddard, July 12, 1870, (original No. 44,528, October 4, 1864,) Glue, for "the comminuted glue hereinbefore described, as a new article of manufacture," *construed* to be an old article of commerce in a state of mechanical division greater than previously used, but unchanged in composition and properties; *held*, not to in-

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volve invention and wanting in novelty. <i>Glue Co. v. Upton</i>	458
24. Reissued letters patent No. 5,026, G. B. Cornell, August 6, 1872, (original No. 118,617, August 29, 1871,) Bung Bush and Wrench, <i>held</i> not infringed by the device made under letters patent No. 133,536, W. Johnson, December 3, 1872, Wrench, which is for a radically different invention. <i>Schumacher v. Cornell</i>	443
25. Reissued letters patent No. 5,841, W. F. Cochrane, April 21, 1874, (original patent No. 37,317, January 6, 1863,) Bolting Flour. <i>Construed</i> to be for a process and patentable, <i>held</i> infringed by the process used in working reissued letters patent No. 5,346, E. P. Welch, April 1, 1873, Middlings Purifier; the use of a flatscreen instead of a revolving reel, and of an air current forced against the down falling meal in place of being forced in the same direction, being a mere matter of form and not of the substance of the process. <i>Cochrane v. Deener</i> , 288	288
26. Reissued letters patent No. 6,030, Wm. F. Cochrane, August 25, 1874, (original patent No. 37,318, January 6, 1863,) Bolting Flour, the last claim <i>held</i> infringed. <i>Cochrane v. Deener</i>	288
27. The claims of reissued letters patent No. 6,249, S. Lewis, January 26, 1875, original patent No. 80,492, July 28, 1868, (Still Water Dam,) <i>construed</i> and <i>held</i> not infringed by a substantially different machine. <i>Cammeyer v. Newton</i>	98
28. Reissued letters patent No. 6,594, Wm. F. Cochrane, August 17, 1875, (original patent No. 37,321, January 6, 1863,) Bolting Flour, <i>sustained</i> as a valid reissue for a claim much narrower than that in the original, and <i>held</i> that while the parts of machinery in defendants' apparatus which go to make up the combination, could not when separately considered be regarded as identical or conflicting with those described in the patent, yet having the same purposes in a combination, and effecting that purpose in substantially the same manner, they are the equivalents of each other in that regard, and constitute an infringement. <i>Cochrane v. Deener</i>	288
29. Reissued letters patent No. 6,595, Wm. F. Cochrane, August 17, 1875, (original patent No. 37,321, January 6, 1863,) Bolting Flour, <i>sustained</i> as a valid reissue and <i>held</i> infringed. <i>Cochrane v. Deener</i>	288

Patent.

See Claim, 2; Evidence, 1, 2, 3; Private Property, 1.

Patent Office.

1. It is the duty of the Patent Office to examine, scrutinize, limit, and make the claim which an applicant is required to present under the law conform to what he is entitled to. *Keystone Bridge Co. v. Phoenix Iron Co.* 364

Patentability.

- See Improvement, 1, 2 ; Particular Patents, 25 ; Process, 3 ; Result, 1.

Presumption.

- See Evidence, 2, 3.

Principle.

1. A patent will not be sustained if the claim is for a result, a principle, an idea, or any other mere abstraction.
Fuller v. Yentzer 138

Prior Foreign Use.

1. Proof of prior use in a foreign country will not supersede a patent granted here, unless the alleged invention was patented in some foreign country; but proof of such foreign manufacture and use, if known to the applicant for a patent, may be evidence tending to show that he is not the inventor of the alleged new improvement.
Roemer v. Simon 348

Prior Knowledge or Use.

- See Notice, 1; Particular Patents, 12; Prior Public Use or Sale, 2.

Prior Public Use or Sale.

1. Where the use made of the invention for six years prior to the application was a public one but for the purpose experiment and in order to test its qualities and remedy its defects, *held* that it was not in public use or on sale with patentee's consent and allowance for more than two years prior to his application within the meaning of Act 1836, secs. 6, 7 and 15 as qualified by Act 1839, sec. 7. *Elizabeth v. Pavement Co.* 514
 2. It is not a public knowledge of his invention that precludes the inventor from obtaining a patent for it, but a public use or sale of it. *Elizabeth v. Pavement Co.* 514
- See Abandonment, 2; Construction of Statutes, 1; Experimental Use, 1.

Prior Publication.

- See Foreign Patent, 2.

Private Property.

1. A patent is private property, and the Government cannot, after it is issued, make use of the improvement any more than a private individual without license of the inventor, or making him compensation. *Cammeyer v. Newton* 98
- See Constitution, 1.

Process.

1. A patent for a process is not infringed by the sale of an article similar to that produced. *Merrill v. Yeomans* 203
 2. In the language of the patent law a process is an art. *Cochrane v. Deener* 288
 3. The patentability of a process is entirely independent of the instrumentalities employed, and it is immaterial whether or not the machinery pointed out as suitable to perform the process be either new or patentable. *Cochrane v. Deener* 288
 4. A process is a mode of treatment of certain materials to produce a given result; it is an act or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing, and if new and useful it is patentable. *Cochrane v. Deener* . . . 288
 5. The process requires that certain things should be done with certain substances and in a certain order; but the tools to be used in doing this may be of secondary consequence. *Cochrane v. Deener* 288
- See Claim, 5; Particular Patents, 25.

Process and Product.*Interrelation of Process and Product.*

See Particular Patents, 10, 11, 13, 17; Process, 1.

Product.

See Claim, 5; Construction of Patents, 1.

Profits.

1. The profits are not all that an infringer made in the business in which he used the patented invention, but they are the worth of the advantage he obtained by such use—or, in other words, they are the fruits of that advantage. *Mowry v. Whitney*, 14 Wall. 651 [9 Am. & Eng. 1.] *Mevs v. Conover* 39
2. Thus where no profits actually resulted from the infringing use by reason of the defective mechanism in combination with which the infringed device was employed;

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- yet as the loss was less than it would have been with the infringed device omitted, this benefit is equivalent to an equal gain, and was rightly estimated as a part of the profits for which the infringer was responsible. *Meyers v. Conover* 39
3. If an infringer of a patent has realized no profits from the use of the invention, he cannot be called upon to respond for profits; the patentee in such case is left to his remedy for damages. General rules stated as to when profits are recoverable in equity. *Elizabeth v. Pavement Co.* 514
4. Where it was found that defendants, infringers, had made no profits, which failure to find was not excepted to by complainants, and no proof was offered by them to show defendants' profits, a decree making them accountable for profits was held erroneous. *Elizabeth v. Pavement Co.* 514
- See Burden of proof. 4.

Reissue.

1. To sustain the position that a reissued patent is not a patent for the same invention which was described in the specification of the original patent, and, therefore, that the reissue is unauthorized and void, the defendant must overcome the presumption against him arising from the decision of the Commissioner of Patents in granting the reissue, and this he can do only by showing, from a comparison of the original specification with that of the reissue, that the former does not substantially describe what is described and claimed in the latter. This must plainly appear before the court can be justified in pronouncing the reissued patent void. *Smith v. Goodyear Dental Vulcanite Co.* 1
2. If the patentees have not claimed the whole of their invention and the omission has been the result of inadvertence, they should have sought to correct the error by reissue. *Keystone Bridge Co. v. Phoenix Iron Co.* 364
- See Construction of Patents, 1; Particular Patents, 17-29; Surrender of Patent, 1, 2, 4.

Result.

1. A result is not patentable, and claims nominally for results will, if possible, be construed to be for the apparatus or certain portions thereof, as described in the specification of the patent. *Fuller v. Yentzer* . . . 176
- See Claim, 2; Principle, 1.

Specification.	PAGE.
1. Inventions or discoveries are usually improvements upon some existing article, process or machine, and are only useful in connection with it. It is necessary, therefore, for an applicant to describe that upon which he engrafts his invention, as well as the invention itself. <i>Merrill v. Yeomans</i>	203
2. When the invention is of a new combination of old devices it is necessary to describe with particularity all the old devices, and then the new mode of combining them. <i>Merrill v. Yeomans</i>	203
3. One who proposes to secure a monopoly of certain inventions at the expense of the public should set forth with clearness and precision the thing which no one but himself can use or enjoy without paying him for the privilege of doing so. <i>Merrill v. Yeomans</i>	203
See Claim, 4.	
Substitution of Equivalent.	
See Combination, 4; Equivalents, 2; Particular Patents, 4, 5, 6, 8, 20, 28.	
Supreme Court of the District of Columbia.	
1. The powers of the Supreme Court of the District of Columbia, in patent cases, are the same as those of the Circuit Courts of the United States. (R. S. secs. 760, 764). <i>Cochrane v. Deener</i>	288
Surrender of Patent.	
1. The surrender of a patent extinguishes it, and it can no longer be the foundation of a legal right. The reissue has no connection with or bearing upon antecedent suits. The antecedent suits depend upon the patent existing at the time they were commenced, and unless it exists and is in force at the time of trial and judgment, the suit fails. <i>Meyer v. Pritchard</i>	35
2. Where since the appeal appellants surrendered and reissued the patent upon which suit was brought, held there was no longer any real or substantial controversy between the parties upon the issues, which have been joined and the appeal is dismissed. <i>Meyer v. Pritchard</i>	35
3. The surrender of a patent extinguishes it, and after its surrender pending suits founded upon it fall with its extinguishment. <i>Mevs v. Conover</i>	39
4. If a patent is surrendered for reissue after final decree or judgment, the surrender has no effect upon a right	

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passed previously into judgment. The right of the
patentee then rests on his judgment or decree, and not
on his patent. *Meyers v. Conover* 39

Trial Out of Equity.

1. Upon a bill in equity for the infringement of a patent it is a matter of discretion, and not of jurisdiction, whether a case shall be first tried at law; and in this matter, the courts of the United States, sitting as courts of equity in patent cases, are much less disposed than the English courts are to send parties to a jury before assuming to decide upon the merits. *Cochrane v. Deener*. 288
See Appeal, 1.

Use.

See Experimental Use, 1.

Utility.

1. Where one of the defences to the patent was that the machine described was of no practical utility, *held* that the number sold by complainant, as shown by the record, is conclusive upon the subject. *Robertson v. Blake* 266

Validity.

1. It does not detract from the validity of a patent that the inventions of others are made use of in carrying out the patented invention. One invention may include within it many others, and patents for each and all be valid at the same time, but in such case each inventor would be precluded from using the inventions made and patented prior to his own, except by license from the owners thereof. *Cochrane v. Deener* 288
See Estoppel, 2

Void Patent.

See Particular Patents, 1, 10, 12, 14, 16, 23; Principle, 1.

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